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C. E. LESHER, *Editor*

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Industrial Co-operation—How?

INDUSTRIAL co-operation is a fine sounding phrase but as a phrase it needs considerable interpretation. Under the auspices of the American Mining Congress, a committee endeavoring to give point to the subject held a meeting in New York recently, attended largely by employers of labor. The substance of its deliberations are contained in a formal resolution which, after asserting that industrial peace is vital and can be reached only through mutual confidence between management and workers and that energy should be diverted from strife to practical co-operation, offers the good offices of the Mining Congress toward reaching those desirable ends. The thinking behind this offer to help bring peace in the industrial world is found in two paragraphs of the platform of the Division of Industrial Co-operation of the congress, one stating that the confidence in management so fundamental to industrial peace can be obtained only by closer personal touch between management and employees, the other that "future peace of industry will not be found in 'organized employers' and 'organized employees' that are created to fight each other. This has been tried for half a century and failed."

One can read nothing less from these words than a declaration for the open shop, for each company or plant management to negotiate with its own labor without interference from national organizations of either employers or employees. Thus and thus only is that desired degree of personal contact attained and retained. The open shop, with works councils and employee representation in management has been attained in many places. It is a proved fact in a number of industries, for it withstood the shock of the great boom of 1920 and the depression of 1921. But it is not to be found in the coal industry.

Before the coal operators chase this mirage let them give heed to the practical problem in the immediate forefront, of dealing with a miners' union that is today, because of its national scope, in as strong a position to dictate terms to management as were the coal operators to dictate to labor thirty years ago. The movement for a mine workers' union was fostered by the necessities of the worker. History is quite clear on that point. Of more immediate interest than discussion of a theory of industrial co-operation based on abolition of the union is the question of whether the employers of union coal-mine labor can recognize and cope with the condition of a labor monopoly essentially complete now. The country is not complacent in the matter; it is quiescent because it has turned the job over to a coal commission. If all that the coal operators can suggest by way of solution for national strikes is to smash the union they may expect instead paternalistic control. No matter what a commission might urge, no congress will deal in such stern doses.

Is present necessity about to drive the union operators into collective action, or into the hands of the government? The non-union operators, observing the two major disasters that have overtaken their Northern brethren in recent years, are united in steadfast opposition to the union, fighting fire with fire to save themselves from domination by Indianapolis.

"Maximum Economic Strength"

IN A RECENT issue of the *United Mine Workers Journal*, Philip Murray, vice-president of that organization, made a plea since repeated to the U. S. Coal Commission for the unionization of all the coal-mine workers of the country, in which article he says "All the coal operators in the country, including those in the non-union fields, are organized in a single, compact national organization known as the National Coal Association." From this he argues that "in all fairness, it should be possible for all the miners of the country" to have their nationwide union so that they "may meet the maximum economic strength of the operators with the maximum economic strength of the mine workers."

Mr. Murray's statement of fact is on a par with that of the man who defined a lobster as a red fish that walked backward. A lobster is not a fish, it is not red, and does not walk backward. The National Coal Association is national in name but not in membership; it includes in its membership but about half of the bituminous coal operators and none of the anthracite operators. It is not organized for and has never functioned as a body for negotiating with the labor it employs. And when it comes to matching "full economic strength" the mine workers, with some two-thirds of the soft-coal and all the anthracite mine labor, have demonstrated most conclusively that they now have a united whole and that the operators, and the whole country, are as shifting sands before them.

The largest employer of non-union coal-mine labor, the Steel Corporation, does not participate in the National Coal Association. There are many others, both union and non-union, that are outside the fold. Mr. Murray doubtless would tell the operators that they too should enjoy the check-off and thereby make their association 100 per cent strong. He appreciates, of course, that were it not for the compulsory payment of dues to the United Mine Workers through the check-off, the paid-in membership of that organization would be nearer one-half than all the men in a given field. The record in the anthracite region shows this. Just as there are operators who are willing to participate in the benefits of organization but who are not willing to share in the responsibility and expense, so there are mine workers who pay dues and go along with the crowd only because they are forced to do so by the complete control of the union in their field.

There is no organization in the bituminous-coal industry that brings the operators together for the purpose of bargaining with union labor. Locally in smaller

groups the associations of operators have interest in labor as the chief factor for their existence, now that trade bureaus have been banned, but on a national scale there is no counterpart for the local wage-negotiating group. That is one of the serious lacks in the industry. Instead of arguing for a national labor union, for the inclusion of non-union fields within its grasp, the United Mine Workers might strive to organize the coal operators in order that there might be some semblance of equality in the economic strength of the two groups. It is all one-sided now.

The strike of 1922 is too fresh in memory for anyone to entertain even a small measure of credence for Mr. Murray's naïve assertion that the poor weak United Mine Workers should be left unhampered by the non-union coal operators in its efforts to build itself to that measure of "full economic strength" whereby it may meet the "maximum economic strength" of the operators. He certainly must have smiled when he penned those words.

If Flour Were Coal

CENSUS returns show that the value of the products of flour and grist mills in the United States in 1921 was nearly $1,200,000,000. The number of establishments engaged in the industry that year was 6,485. Thus it will be seen that in point of value and of number of plants the milling industry is comparable with that of the production of bituminous coal. The decline in value of output from 1919 to 1921 was 42 per cent, compared with less than 9 per cent drop in the output by soft-coal mines in the same two years.

In other words, here is an industry about which little is heard, one that comes in for no berating by the public, one that has as great fluctuations, as great irregularity in operation, as bituminous coal. Flour is as essential to public welfare, health and happiness as coal, perhaps more so in that all the flour is used for human consumption and but from 10 to 15 per cent of bituminous coal goes to householders. The Census reports also that the unit values of flour and grist-mill products were much higher in 1919, were in fact abnormal, as a result of federal stimulation of production during the war. Yet there has been no long series of congressional investigations or a Flour Commission. It is to be presumed that the operators of flour mills are just as human as coal men, with a normal desire to be engaged in a profitable business.

What are the conditions that have immunized flour? In the first place there is no United Flour Workers of America, hence no stoppage of flour production. Should 75 per cent of the flour mills be closed for five months because of a disagreement between the management and the men, a situation would arise demanding the attention of the federal government. Although flour can be more easily stocked than coal, the country normally carries a reserve of less than 30 days' supply. Should the production of flour be stopped for even a short period, prices most certainly would mount and actual want develop. But that has never happened.

In the last three years the production of wheat flour has ranged from 7,461,000 barrels to 13,917,000 barrels per month, a spread as wide as is found in the production of coal, save during national strikes. Yet the flour mills have had no occasion to complain of car shortage. The output of the mills apparently flows over the rails as regularly as it is produced and required. If flour were to have the experience of bituminous coal there would be periods when customers could get but half the quantities they required or bought because the railroads were not able to furnish transportation.

Now, since the men who make and market flour are as numerous as those who produce soft coal, and since they are business men, large and small, as in the coal industry, there must be problems of production and of merchandising, cancellations of orders, questions of contract performance, of quality, and of price, such as characterize the coal trade. It is hardly to be thought that the flour industry functions perfectly. May it not be that because it has no major labor problem and no difficult transportation situations flour is not like coal?

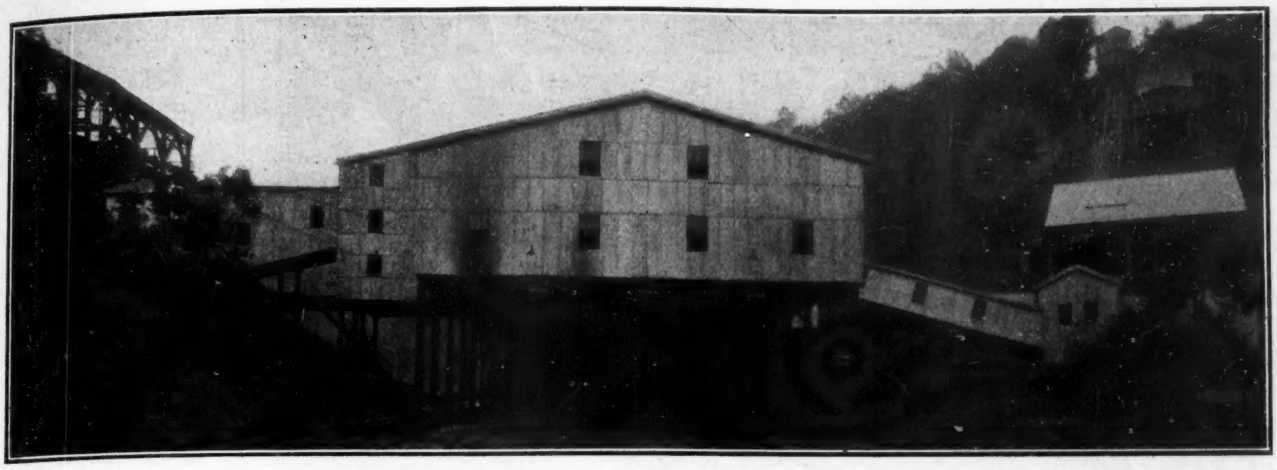
Concerning Private Management of Roads

FREIGHT-CAR shortages, as reported by the American Railway Association, are gradually decreasing. At the same time loadings of freight cars are increasing, and at approximately a million cars per week are now at a level previously reached only in the fall season, when crop and coal movements are accelerated. In the week of April 21 loadings of revenue freight were 957,743 cars, exceeding all weeks since that of Nov. 17, 1922, and within 6 per cent of the highest record of all time, that of the week of Oct. 15, 1920.

Now, the conjunction of these two things, car loadings of such huge proportions and a shortage currently less than 50,000 cars and diminishing, means one of two things—either the roads are vastly more efficient than in the immediate past, when car shortages of over 100,000 cars were coupled with loadings below 800,000 cars per week, or there has been an increase in equipment and facilities. The answer is found in both directions. A total of 5,130 new freight cars and 142 new locomotives were put in service in the first half of April. In the three and a half months from Jan. 1 to April 15 the number of new cars installed reached 44,302 and of new locomotives 1,077. On April 15 new cars on order numbered 116,890 and locomotives numbered 1,950.

These additions to equipment do not suffice to account for the remarkable showing being made by the railroads; they are but substantial helps. The railroads are digging in their toes and working to meet the load imposed by a truly remarkable increase in industrial activity. They have a definite program. They are organized into a definite, compact unit. They have a common motive and that is to show the country that, given half an opportunity, the railroads of the United States can, *under private ownership and management*, meet the transportation requirements of the country.

The railroads have called on the managers of all other business to assist them in carrying out their program for this year by loading cars to capacity, by decreasing car detention and by storing coal during the summer. Business is responding. A part of the railroad managers' program calls for storage of railroad fuel during the coming summer. Reports are to the effect that but few roads have taken steps toward putting down coal against next winter's needs. When they really put the coal storage part of their program in action the railroads will have assured themselves of relief for a major portion of their coal transportation problem of next winter.



Efficiency Methods Practiced at Hardburly Mines

Storage of 480 Tons Aggregate Capacity Steadies Flow of Coal to Tipple—Egg Coal from Two Seams Kept Separate—Entry Driving Speeded with Lowered Cost and Bettered Air—Slate Dumped at Minimum Expense

By Alphonse F. Brosky
Assistant Editor, *Coal Age*, Pittsburgh, Pa.

IN PREVIOUS articles on the methods and practices of southeastern Kentucky it will have been noted that not only is there a wide diversity in the mining methods of the various coal companies but that the surface equipment also is by no means standardized. For instance, many different means are used for lowering coal to the tipple, the rope-and-button conveyor, the scraper conveyor, tubes and the monitor being all in use. The last of these is found at the Hardburly mine of the Hardy-Burlingham Mining Co., located at Hardburly, Perry County, Ky., which village is six miles northeast of Hazard.

The 2,500 acres of land owned by this company is underlaid by three minable coal seams. No. 4 seam is 100 ft. below the railroad and has a thickness of 39 in. No doubt this coal will be removed in the distant future after the thicker and more easily mined coals above it have been extracted. No. 7 seam is 200 ft. above the railroad, its thickness being almost 5 ft. From this the greater part of the output of the mine is derived. No. 8 seam also has been mined. This is 68 in. thick in some inextensive areas. It lies approximately 380 ft. above the railroad. At the time of my visit no coal was coming from this upper seam.

As the coal comes to the twin tipple at the bottom from two different hills, whenever both seams are being worked, four dumphouses are kept in operation. After being transported a short distance along the hillside from the mine openings the coal is discharged by kickback dumps into 100-ton bins. This operation requires the services of four men in each of the upper dumphouses and six men in each of the lower dumphouses. The coal is lowered to the tipple in 10-ton tank-type monitors, two in balance for each dumphouse.

The company contemplates a change in its method of lowering coal to the tipple. The use of monitors breaks the product, for when they are used it has to be dumped twice instead of once. To avoid this loss, the coal on both sides of the valley, hereafter will be transported in full trips from both seams to one point at the elevation of No. 7 seam, from which it will be lowered to the tipple in mine cars on an endless rope operating on an 18-per-cent grade. With the proposed change a full trip of mine cars may be fed to the bottom, and their contents emptied by a rotary dump into a large storage bin. At this point a reciprocating feeder will deliver the coal to a conveyor which will carry it to the shaker screens.

At the present time only one bed, the lower, or No. 7, seam is mined, though, as already mentioned, the upper, or No. 8, seam is provided with equipment for lowering coal to the tipple. Here, as elsewhere, the railroad-car supply is limited and the mine operates only a few days a week. Rather than work two seams part time and only at a fraction of capacity, the company closed down the upper seam and takes coal only from the lower, or No. 7, seam. To avoid confusion the conveying and dumping problems will be described on the assumption that both seams are being mined.

The monitors handling the two coals separately discharge them at the foot of the hills into individual 20-ton bins. Conveyor feeders discharge the coal to main run-of-mine conveyors of the double-compartment apron type, each of which is capable of handling 300 tons of coal per hour. The two screening units can handle efficiently all the coal that can be passed over the two conveyors, or a total of 4,800 tons per day. This is the ultimate output of the Hardburly mine, which places it in the group of the few large one-tipple operations in Kentucky.

From a distance the dumphouses, because of their generous proportions, closely resemble the usual 1,000-ton tipple and undoubtedly would be taken for such were they located at the foot of the hills. With a view to obtaining a large ultimate output and in order to

NOTE—Headpiece shows Hardburly tipple designed to handle 4,800 tons per day. On the right are two of the dumphouses with the 100-ton bins and their monitor roads. Five tracks go under the tipple.

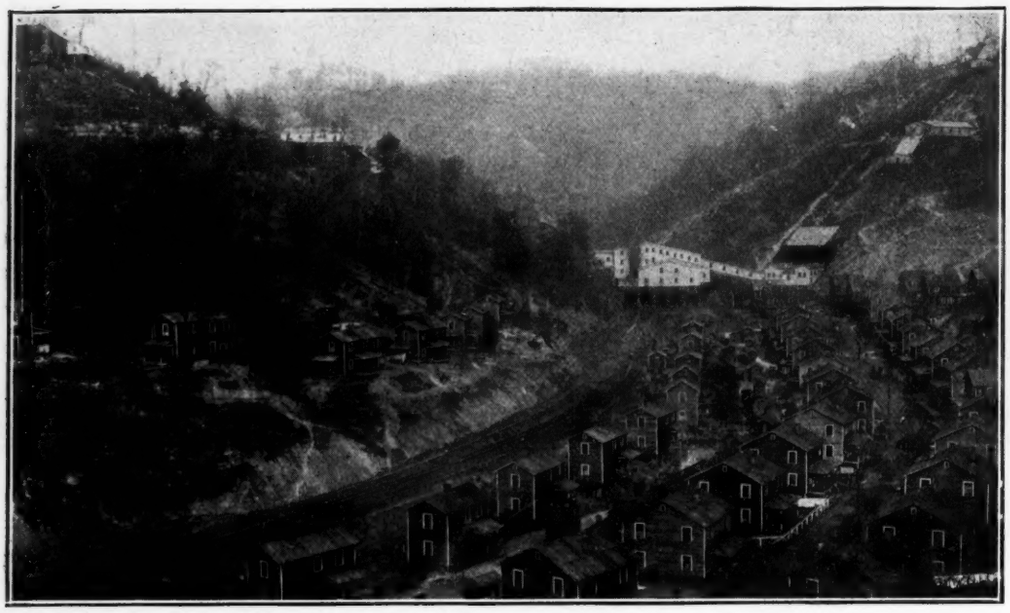


FIG. 1

Hardburly, Ky.

Largest operation in the Hazard field. Note the four dumphouses, two on each hillside, each receiving the output from a separate seam of coal and each dumping into a separate pair of monitors. All four dumphouses have each a storage capacity of 100 tons. Most of the residences in the mining village are for the housing of two families. Hardburly lies near the headwaters of Lotts Creek not far from the Knott County line but still in Perry County.

insure facility in handling this tonnage the dumping operations in the several headhouses must be practically continuous. Delays at these points would militate against the establishment of a capacity run and cause delays all along the line.

To avoid such irregularities in the flow of coal provision is made at the dumphouses so that coal can be stored in bins in case the monitors are delayed. Thus, if the inclined planes are not working, the operation of the mine continues, at least for a while, unaffected. On the other hand, if the trips fail to come to the dump the supply of coal in the bins allows the monitors to make several trips, thus keeping the tipple in operation. These four bins have inclined bottoms which discharge the coal by gravity to the monitors. At the foot of each hill are located two 20-ton bins into which the monitors discharge. Run-of-mine conveyors feed the coal from these pockets to the tipple proper.

With storage bins thus located the efficiency of the tipple is increased and the tonnage of the mine augmented. The four bins already described and shown in the diagrammatic plan, Fig. 2, each have a capacity of 20 tons, thus providing a total storage of 80 tons, which is available for preparation over the tipple the moment the machinery is started up. At many mines where coal has to be lowered to the tipple much valuable time is lost every morning before the preparation machinery can begin to operate. But at this mine, with the four bins filled, the tipple may run at capacity for a period of eight minutes. This time is sufficient for the loading, lowering and dumping of the monitors, by which the bottom bins can be replenished.

Each of the four dumphouse bins is of 100 tons capacity. They also form reservoirs, and when filled they supply the monitors with coal sufficient to run the tipple at capacity for a period of 40 minutes without needing refilling. These bins release about 150 mine cars which otherwise would have to stand at the dumphouse or on an underground sidetrack all night in order to supply coal for the early morning run.

Two sizes, lump and egg, are prepared over the tipple, the slack resulting being chuted into the railroad car directly from the screens or else carried by a slack conveyor to a mixing table where combinations of various sizes are made. The screening equipment prepares the mine-run coal so that 40 per cent of it, which is known as "lump," passes over a 4-in. round screen, 30 per cent, termed "egg," passes over a 1¼-in. round screen, the remaining 30 per cent, as slack, passing through the latter.

The run-of-mine conveyor,

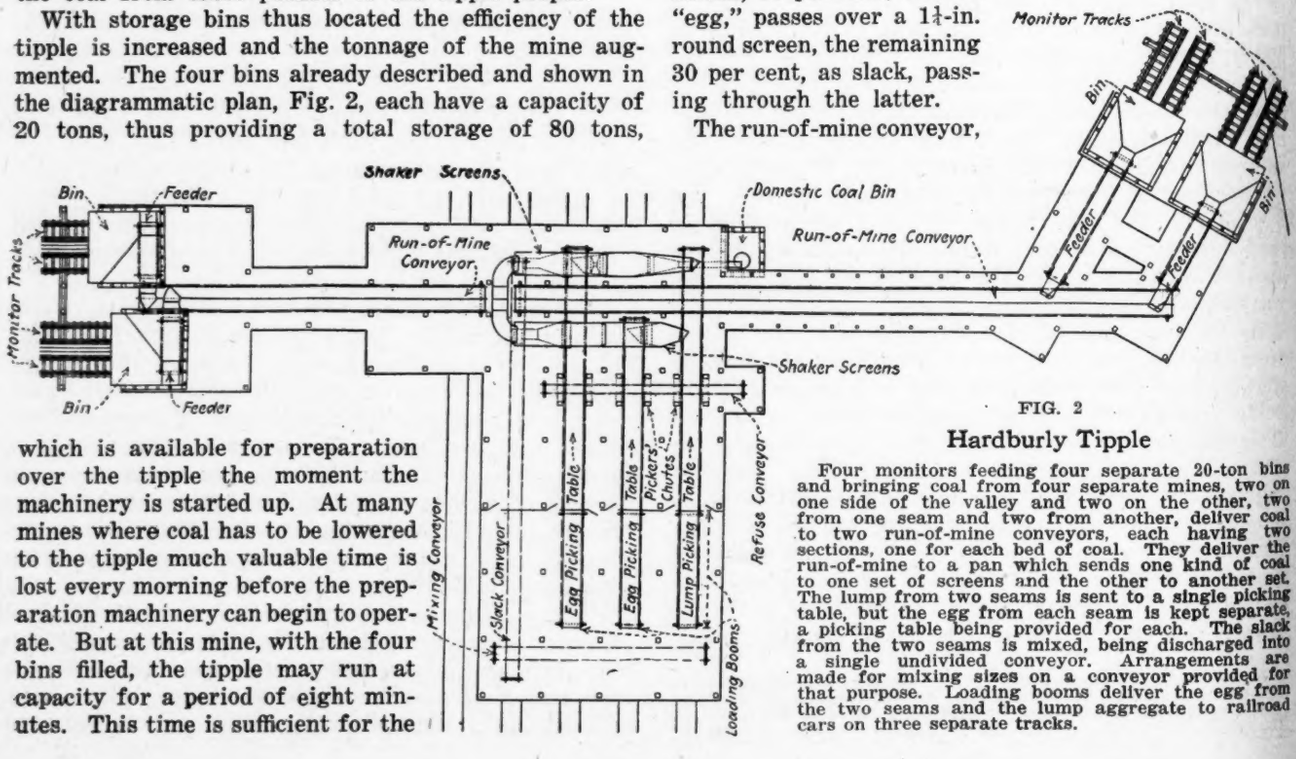


FIG. 2

Hardburly Tipple

Four monitors feeding four separate 20-ton bins and bringing coal from four separate mines, two on one side of the valley and two on the other, two from one seam and two from another, deliver coal to two run-of-mine conveyors, each having two sections, one for each bed of coal. They deliver the run-of-mine to a pan which sends one kind of coal to one set of screens and the other to another set. The lump from two seams is sent to a single picking table, but the egg from each seam is kept separate, a picking table being provided for each. The slack from the two seams is mixed, being discharged into a single undivided conveyor. Arrangements are made for mixing sizes on a conveyor provided for that purpose. Loading booms deliver the egg from the two seams and the lump aggregate to railroad cars on three separate tracks.

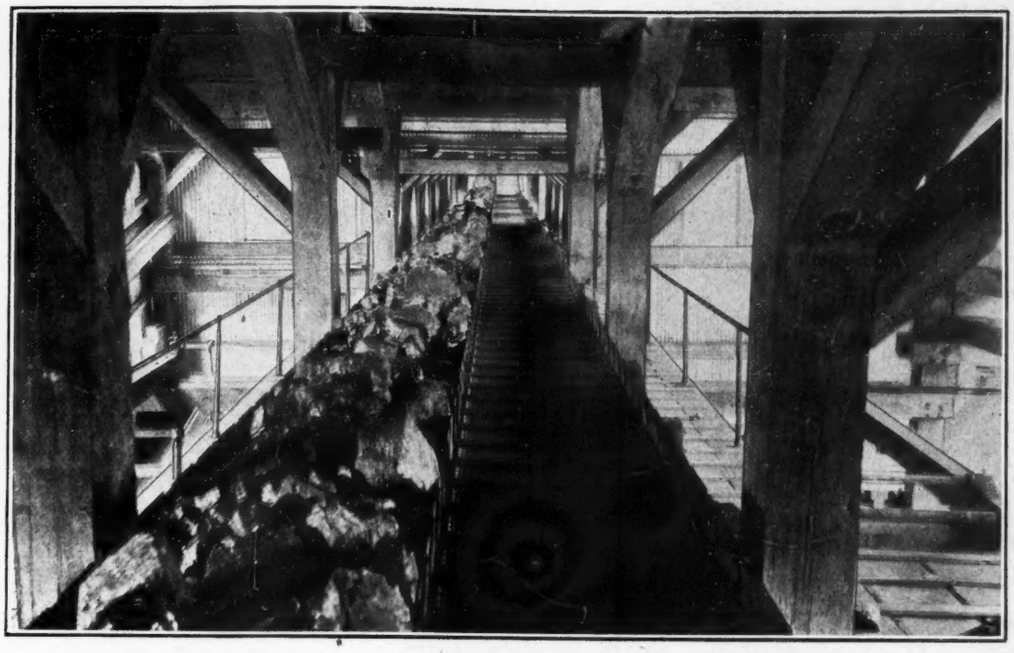


FIG. 3

Run-of-Mine Conveyor

On each side of the tipple is a conveyor that takes the whole product of two mines, keeping each separate. It will be seen that at the time of taking the photograph from which this illustration was made the coal from only one mine was being transported, the right-hand half of the conveyor being empty. It will be noted that the conveyor shed is open to the weather on both sides.

which leads from the lower bins to the tipple, has two compartments set side by side, the coal from each of the two seams being carried separately to a receiving bin between the two sets of screens. Here the coal from the two seams is still further diverted, each coal going to its own screening rig. The screens and run-of-mine conveyors are normal to the railroad tracks, but the picking tables with their loading booms run parallel thereto.

Lump coal separated over the two screen sets is merged to pass over one picking table, but the egg for each seam is cleaned on a separate table and loaded into railroad cars without mixing. The egg coal, though it comprises only 30 per cent of the whole product, is singled out for this preference because it is to be used for metallurgical purposes and is not destined, like the lump coal, which constitutes 40 per cent of the product, for the domestic market. The egg coal and slack are shipped to the parent corporation, the Andrews Steel Co., of Newport, Ky., where these products are consumed for metallurgical and steam purposes respectively. Fig. 2 shows clearly the general arrangement.

Two systems of mining are used at the Hardburly mine. The older workings are laid out in panels and operated on the system of half advance and half retreat, by driving as many as twenty-four rooms in one direction advancing and as many more in the opposite

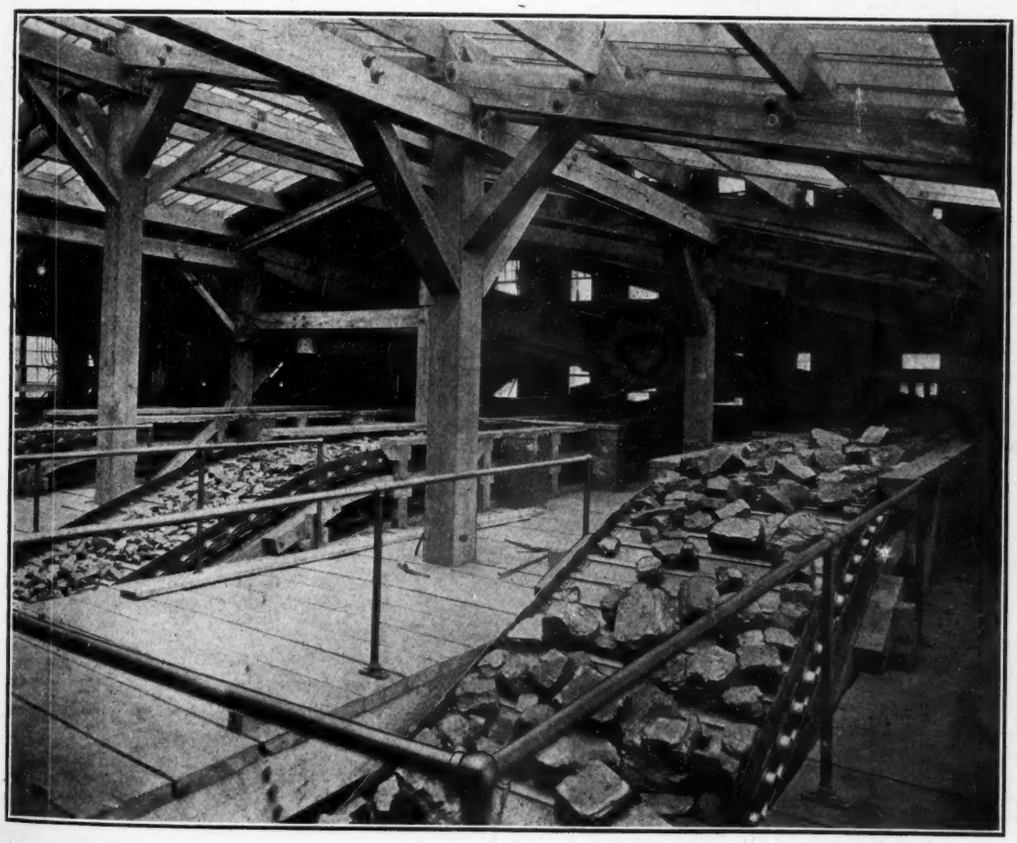


FIG. 4

Tipple Floor

In the foreground are the loading booms and behind them the picking tables. The loading boom to the right takes the lump coal and those on the left take egg coal from two separate seams. The boxes for refuse can be seen alongside the picking tables. They discharge onto a conveyor below. The slack conveyor on the extreme left is out of sight. In the rearground are the screens for the coals from each of the two seams, which in sizing are kept separate. The slack, as also the lump, in the two seams is, however, mixed on leaving the screens.

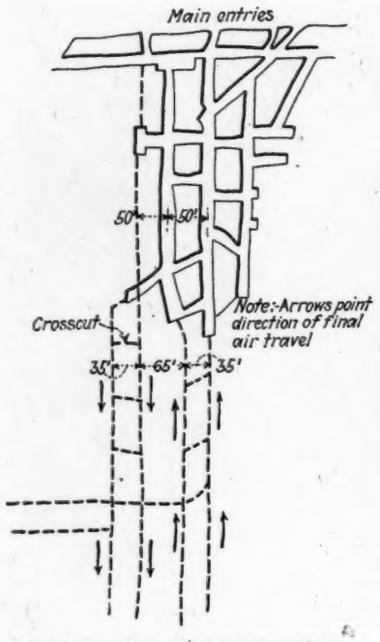


FIG. 5—OLD AND PROJECTED WORKINGS

The old workings at the top have provision made for four headings at 50-ft. centers. Arrangements are now made to make the outer pillars 35 ft. wide less the width of one roadway and to make the inner pillar 65 ft. wide less the same reduction. The two headings will first be ventilated in pairs, one being the return for the other, but after they arrive at a crossheading one pair will serve as returns for the other pair, as the ventilation arrows indicate.

direction retreating, thus completing one panel. The number of rooms for which provision is made, however, depends entirely upon local conditions, being varied as the outcrop is approached. This, however, is the old method, though it, perforce, is being continued in the workings thus started. Unless this system is watched closely, creeps are likely to ensue, and the method described and about to be discarded has the disadvantage that the men in charge, whenever working places are needed, are tempted on the advance to drive rooms in both directions instead of in one only. Another system is now used in the new workings. This is similar to that in operation at the Lynch mine of the United States Steel Corporation. Each section of the mine is divided into six panels.

The rooms in panels Nos. 1 and 2 are driven on the advance end toward the nearer extracted area. The rooms in panels 5 and 6 also are driven on the advance and toward their nearer extracted area, that is in the opposite direction to the rooms in panels Nos. 1 and 2. These rooms are drawn on the advance so as to form straight pillaring lines across panels Nos. 1 and 2 and Nos. 5 and 6. This makes the roadways adjacent to these panels untravelable wherever the pillaring line has struck them, but approach always is possible through the roadway between panels Nos. 3 and 4, which are left standing until the advancing headings reach their terminus; then the roadway between panels Nos. 3 and 4 has served its purpose and is worked out on the retreat. In this way there always is a roadway, well protected,

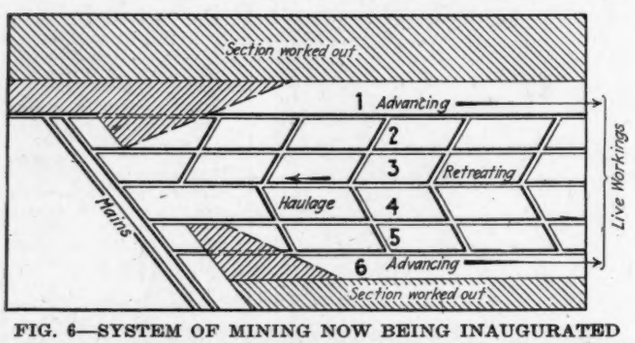


FIG. 6—SYSTEM OF MINING NOW BEING INAUGURATED

Work proceeds, advancing in panels 1, 2 5 and 6 and the pillars are drawn advancing, thus caving the headings so that the roadways would be closed if it were not for the heading between panels 3 and 4 and the side roadways through those panels by which approach is kept open to the working entries. Panels 3 and 4 are withdrawn retreating.

through which access can be obtained to the advancing headings. The rooms are made 350 ft. long. Consequently the pillar on either side of the roadway in the center is of that width and is amply able to prevent any undue pressure such as will close or weaken that roadway.

Barrier pillars 100 ft. wide protect the mains for a distance within the hills until the overburden becomes excessively heavy and then these pillars are widened to 150 ft. The entries were driven at first on 50-ft. centers. Now, however, where the entries are quadruple the three intervening pillars are made of unequal size, the outer pillars of the three being narrowed to 35 ft.

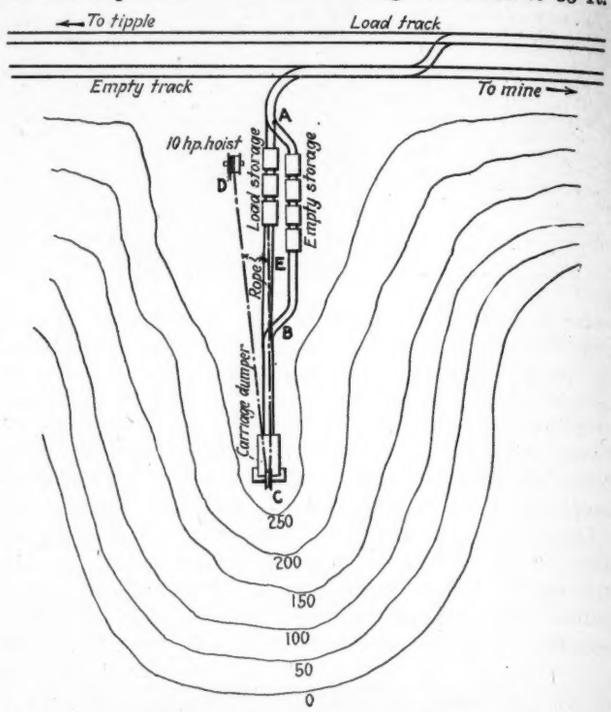


FIG. 7—PLAN OF REFUSE DUMP

A storage for empties is placed from *A* to *B*. At *C* is a carriage dump up which the empties are pulled to a kickback tippling device, *C*, the rope being payed out or wound up by the 10-hp. hoist, *D*. A man is stationed at *E* to transfer the rope from the last empty to the nearest loaded car. The dumping device is automatic, but a man is needed to run the hoist and it is preferable to have one to couple or uncouple the rope.

and the innermost pillar of all being widened to 65 ft. This renders it easy to make crosscuts between the outer pairs of headings and so enables fresh air to be carried more speedily to the advance faces. It also accelerates the progress of the entry. Hardly anything slows up heading driving so much as the excavation of long crosscuts between headings.

Eventually the air is driven up two of the entries on one side and down the two others on the other side, as the arrows indicate in the sketch, but when the headings are being driven temporary brattices are installed on crosscuts, and the narrow pillars are broken through with only two cuts on each side. As the shoveling distance is only a few feet, coal can be shoveled from the crosscut into a car without the formality of laying track. It is unnecessary to make crosscuts through the large pillars more frequently than every 350 or 400 ft.

At the Hardburly property the rock from mines working at an elevation above the railroad is discharged by means of a kickback dump mounted on an inclined track affixed at one end to the rock pile and supported at the other end by a small truck. The arrangement is really that of a track upon a track.

FIG. 8

Carriage Dumper

Two tracks are provided at the end of the dump. One carries the cars on the level, aligns the upper, or inclined, track and supports the carriage by which the upper part of the incline is upheld.

The dumping carriage has been located a stone's throw from the portal of the mine on a slate pile that projects from the hillside. A sidetrack leads off the main tramroad and along the center line of the protruding dump to its brink, where the carriage dumper is placed. The Hardburly mine is equipped with two of these carriage dumpers, one on each hill, which differ in the track arrangement only, the construction of the carriages being identical. Fig. 7 is a schematic sketch showing a track arrangement that will work well with this slate-car dumper.

Between the dumping point and the main tramroad a parting track for empty cars has been placed. The switch, *B*, nearest the carriage dump is a self-acting or spring switch, while that at *A* must be thrown by hand. The mine car loaded with slate is pulled onto the carriage dump by a $\frac{5}{8}$-in. steel cable which passes around a horizontal 12-in. sheave, *C*, on the carriage dumper and thence back to a 10-hp. motor-driven hoist located at *D*.

One man can perform the entire dumping operation, but as several daymen generally are working about the mine portal and as the dumping operation is intermittent, two men will work to better advantage, the hoistman and his helper. The latter locates himself in the vicinity of point *E*, where he disengages the rope from the empty and attaches it to the loaded car.

Quick Action with Only Two Men Working

Slate cars coming from the mine singly or in numbers are allowed to accumulate on the slate track until an opportune time when the dumping commences. The loads of slate are pulled by the rope, one at a time, to the carriage dumper, which automatically empties the mine car. The empty car is then kicked back and drops by gravity and switches to the empty or run-around track under control of the friction brake of the hoist.

Little time is consumed in the dumping, as may be realized after a study is made of the general arrangements. But it is only after the slate bank has been built out far enough to afford storage room for empties and loads that automatic and quick action is attained. However, where the hillside falls away sharply, with well-planned stowing of the slate one set-up of the main track, moving successively ahead, should successfully take care of the mine refuse for a period of years, as the larger pieces of slate roll down the hill for considerable distances.

The track bed on any slate dump settles more or less, which necessitates occasional filling in, tamping and aligning of the track. After a time the slate disintegrates and the track becomes compact. Thereafter only the more recent additions to the track approaching the dumping point require attention. A haul of 500 ft. would not be beyond the limits of recognized efficiency.

The empty and loaded track usually are on the same level, for it is easy to get the empty car to pull the rope back to the desired point on the sidetrack. It gets so good an initial start when plunging down the incline of the dumper that it does not readily stop. Nevertheless the distance may eventually become too great, and in that case it will be necessary to grade the

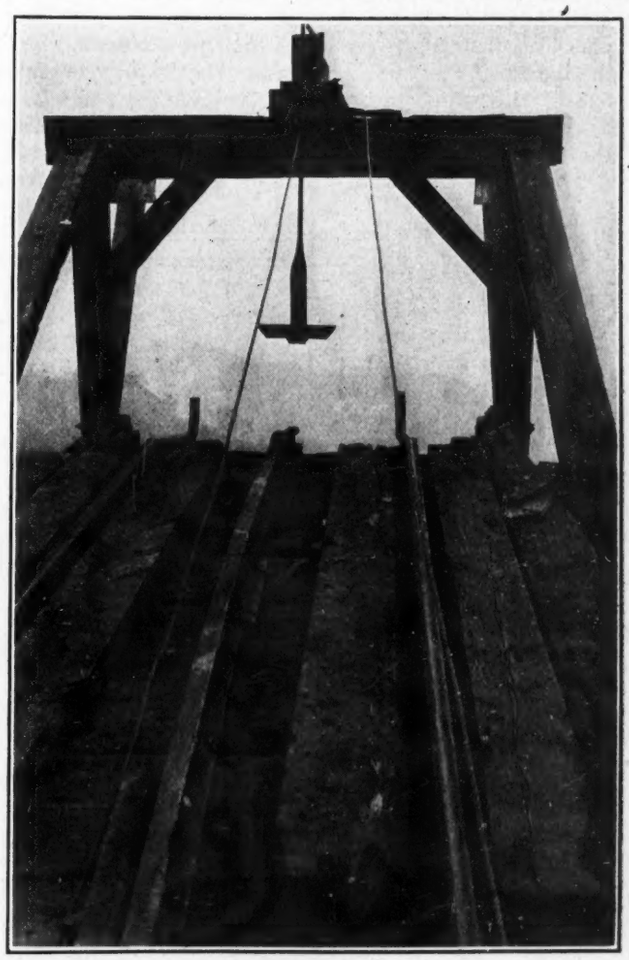


FIG. 9—GALLOWS FRAME

In this view can be seen the rope by which the cars are drawn up the incline, the kickback dump by which the cars are discharged and the device by which the end gate is lifted.

FIG. 10

Another Type of Dumper

Here the track on which the incline rests is not along the line of the incline but at right angles thereto, permitting the dump to be pried sideways and the end of the dump to be fanned out.

empty track so as to keep the car moving to its destination. The friction brake on the hoist can control the mine car at all times.

In Fig. 8 is shown one of these carriage dumpers. The rails on the incline are on a grade of about 20 per cent and are held in gage by bolts of round steel and by spikes in the elevating platform on the right and in a wooden tie in the middle. To this tie are fastened angle-iron guides which hold the riser track on and directly above the level track. If desired, a chain may be fastened about this bearing tie and the track tie beneath it.

The elevating platform has a frame of 4x12-in. oak stringers. These are braced crosswise by bolts and also by a floor of tie members that are alternately 2x10 in. and 3x10 in. The lower end of the frame rests upon 6x8-in. ties which in turn are supported on ¾-in. plates. These, by through bolts and plates, are caused to enfold the rails.

The frame rises on a grade of 20 per cent and rests on a six-wheel truck that is built up solid and runs on mine-car wheels. These are chained to the track as shown. A gallows frame, Fig. 9, is erected on the elevating platform and to this is attached the rope sheave and a grab arm for opening the end gate of the mine car. Directly beneath this gallows frame and at the end of the elevating platform is placed an off-balance dumper such as was commonly used in the past for dumping coal.

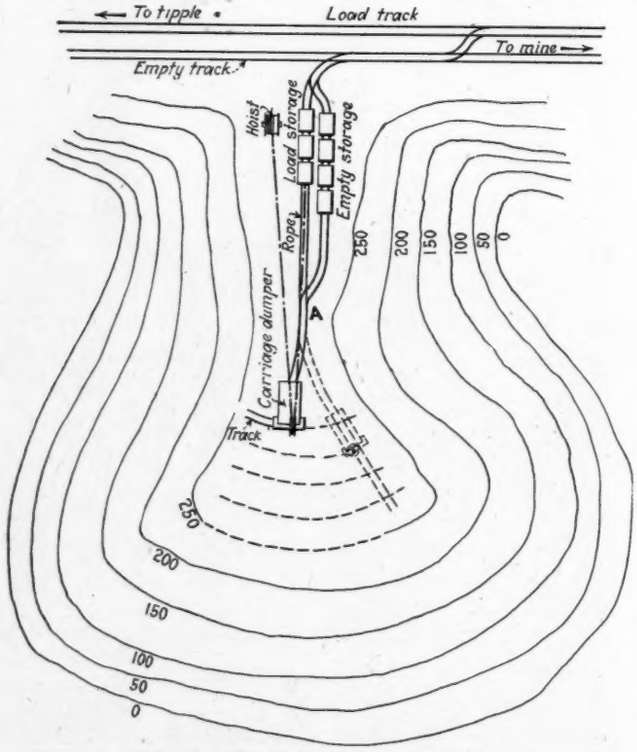


FIG. 11—PLAN OF DUMP IN FIG. 9

In consequence of the ability of the carriage dumper to move on an arc it is possible to swing the dump and enlarge the area over which the refuse is dumped, thus increasing the capacity of the slate pile considerably.

This carriage dump can be moved ahead easily by the hoisting rope, which is passed around a fixed object somewhere in front of the carriage.

Fig. 10 shows another form of the carriage dumper with a track arrangement different from that already described. The wheels of the carriage move on a track at right angles to the line of the incline of the dumper. By moving the incline on these rails the bank is widened out in fan shape. The track can be shifted ahead or pushed over laterally as occasion demands, movement in either direction adding to the storage capacity. Fig. 11 shows a sketch plan of this arrangement.

The men at the Hardburly mine find that by playing a stream of water on the slate dump its settling is hastened, for the water speeds up the rate of disintegration, or weathering, of the slate. The water comes from a 3-in. pump stationed in the mine.

57 Leases Issued to Mine on Public Lands Containing 422,000,000 Tons of Coal

A total of 57 leases for the operation of coal mines on public lands estimated to contain 422,000,000 tons of coal had been issued by the Department of the Interior up to March 1. The required investment of capital in connection with the operation of these leases amounted to $2,976,050. A total minimum annual production of 2,108,400 tons of coal is required from these leasing operations, technical supervision of which is entrusted to the Bureau of Mines.

The largest number of leases for the operation of coal mines granted in any state was 21, in Utah. Twelve leases had been granted for operations in Colorado, 8 in Wyoming, 7 in North Dakota, 5 in Montana, and 2 each in New Mexico and Washington.

A total of 337 permits for prospecting for coal on leased public lands also were issued by the Interior Department up to March 1. Of these, the largest number, 79, were in Wyoming; 71 were in Colorado, 42 in Montana, 33 in Nevada, 30 in Utah, and 25 in Oregon. Nineteen permits for prospecting in New Mexico have been issued, 18 in Washington, 8 in Idaho, 5 in North Dakota, 3 each in California and South Dakota, and 1 in Arizona.

The coal-prospecting permits issued covered 293,104 acres.

Steep Pitches in Thick Coal Seams Greatly Affect Eastern Middle Anthracite Field Operations

Tendencies in Fifty Years Are Like Those in Other Districts—Thickness Drops 61 per Cent and Production per Man 30 per Cent—Purchased Power Boosts Output

BY DEVER C. ASHMEAD
Kingston, Pa.

SMALL basins, steep pitches, thick beds and moderate depths make mining conditions in the Eastern Middle anthracite field different in some respects from those of the Northern field, described in three previous articles in this series. The general tendencies, however, are much the same as the years roll by. The average thickness of the seams in this field has decreased 61.6 per cent, from 21.10 ft. in 1872 to 8.10 ft. in 1922, just as thickness in the whole Northern field has decreased; but this Eastern Middle field still averages 1.27 ft. thicker than the Nanticoke district, 3.22 ft. thicker than Lackawanna and 3.01 ft. thicker than Wilkes-Barre. Output per man in this field, as in the others, also has dropped — from 2.81 tons a day per man fifty years ago to 1.95 tons now — especially since the war, though the output per miner over the half century has fallen much less than in the whole Northern field. The Eastern Middle field comprises the area between the two main deposits of anthracite, the Northern and the Southern coal districts. It is located on a high plateau between these two. In the Eastern Middle district erosion has been very great, so that what remains is only the bottoms of the basins. These take the form of separate canoe-shaped troughs of relatively small size and generally having heavy pitches.

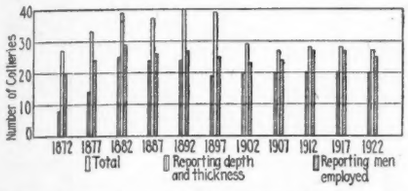


FIG. 38—NUMBER OF EASTERN MIDDLE FIELD COLLIERIES CONSIDERED IN THIS ANALYSIS

This diagram shows in the first column of each group the number of collieries that reported on the thickness of the coal beds and the depth of the workings. The second column shows the number reported by the state mine inspectors, and the last column the number used in the tonnage calculations. The collieries which produced a large portion of their coal from strippings have been omitted from the calculations. However it was not possible to exclude all stripping coal.

The Mammoth bed, known as the Baltimore bed in the Northern field, and the Buck Mountain bed attain great thickness in parts of this field. Small basins, steep pitches, very thick beds and moderate depths are features that make this field radically different from fields previously described in this series of articles. It requires an entirely different type of mining, and in many places permits extensive strippings, especially where thick beds turn over to flats at the outcrop or lie in small basins from which the entire rock filling can profitably be removed to recover the coal. The sections shown in Fig. 39 consists of two sections taken from the reports of the second geological survey of Pennsylvania. These sections were about two miles apart but have been combined to show the general conditions in the field. The beds that are being mined in this region, named from the surface down, are as follows: Primrose, Holmes, Mammoth, Wharton, Gamma, Buck Mountain and Alpha. Below these is the Pottsville Conglomerate.

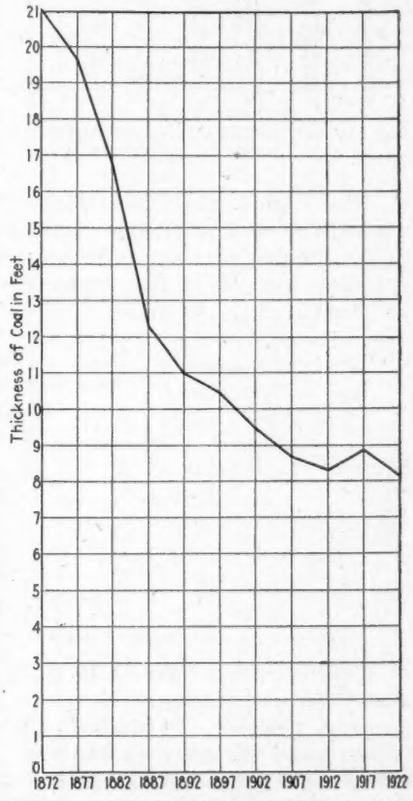


FIG. 40—AVERAGE THICKNESS OF THE COAL BEDS IN THE EASTERN MIDDLE FIELD

In the footnote to Fig. 3 in the study of the Lackawanna district (*Coal Age*, Vol. 23, p. 324) the full method of calculating this curve was set forth. The rapid decrease in the earlier years and the gradual slackening off are of importance as indicative of the future.

In the earlier years of the period under consideration the Mammoth bed was practically the only one that was worked to any extent, but as the workings became more extensive and the first mining approached completion

NOTE.—This is the fourth in a series of articles by Mr. Ashmead describing conditions in the seven sections of the Pennsylvania anthracite region. Previous articles appeared as follows in *Coal Age*, Feb. 22, March 22 and April 5. The fifth will be printed in an early issue.

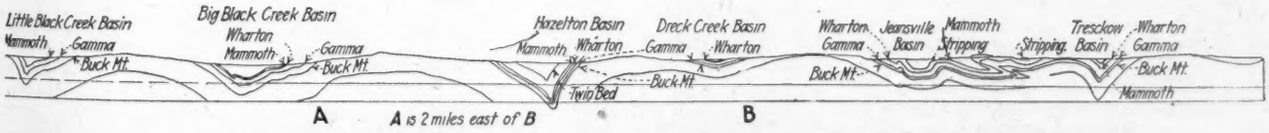


FIG. 39—CROSS-SECTION OF THE EASTERN MIDDLE FIELD NEAR HAZLETON

This cross-section was reproduced from the reports of the second geological survey of Pennsylvania. The northern end of the cross-section was made two miles east of the southern section. This was done so that some idea of the number of different basins in the region might be obtained. It will be noted that the section shows a series of detached V-shaped basins.

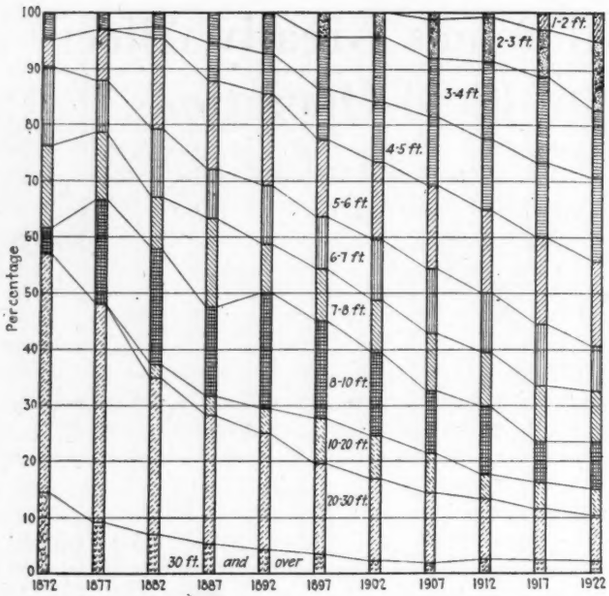


FIG. 41—PERCENTAGE DISTRIBUTION OF BEDS BY THICKNESS IN EASTERN MIDDLE FIELD

in this region, then the thinner beds began to be worked and as a result there has been a steady decrease in the number of thick beds being mined and a corresponding increase in the number of thin beds. Fig. 40 emphasizes this. It shows that the average thickness

TABLE XXXI—NUMBER OF EASTERN MIDDLE FIELD COLLIERIES IN THIS STUDY

	Reported by Inspectors	Having Depth and Thickness Data	Having Tonnage Data
1872	27	8	20
1877	33	14	24
1882	39	25	29
1887	37	24	26
1892	40	24	27
1897	39	19	25
1902	29	20	23
1907	27	20	24
1912	28	20	27
1917	28	20	27
1921-22	27	20	24

of beds decreased from 21.10 ft. in 1872 to 8.10 ft. in 1922. This is a drop of 13 ft., or 61.6 per cent. The decrease, however, has not been uniform, for in the first fifteen years the decrease was 8.86 ft., or at the rate of 0.59 ft. per year, but in the last thirty-five years the decrease has been 4.14 ft., or at the rate of 0.12 ft. per year.

From Fig. 41, which shows the variation in the thickness of the beds being mined, it is seen that in 1872 57 per cent of the beds were over 20 ft. thick and 95 per cent of the beds were thicker than 4 ft. The same condition applies to 1877, except that the beds thicker than 4 ft. had increased to 97 per cent. It was not until 1897 that beds

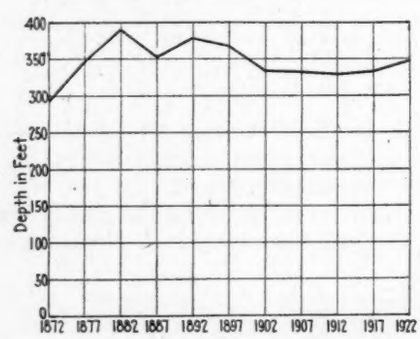


FIG. 42—WEIGHTED AVERAGE DEPTH OF WORKINGS IN THE EASTERN MIDDLE FIELD

Under Fig. 5 in the first part of this article in the footnote is described the method used in the calculation of this curve showing the average depth of workings (*Coal Age*, Vol. 23, p. 325).

TABLE XXXII—WEIGHTED THICKNESS AND DEPTH AVERAGES OF EASTERN MIDDLE FIELD BEDS

	Thickness of Beds	Depth of Workings		Thickness of Beds	Depth of Workings
1872	21.10	284	1902	9.43	334
1877	19.67	346	1907	8.69	332
1882	16.71	391	1912	8.29	327
1887	12.24	351	1917	8.89	333
1892	10.96	379	1922	8.10	347
1897	10.41	367			

less than 3 ft. thick were mined and in 1907 operations began in beds between 1 and 2 ft. thick. In 1922 these amounted to 5.5 per cent of the total number but their proportion of the total coal mined was less than that. In 1922 beds over 20 ft. thick had decreased from 57 per cent in 1872 to only 10.5 per cent, and the beds thicker than 4 ft. had decreased from 95 per cent to 71 per cent. Naturally, thin beds had to be opened in order to keep up production.

Fig. 41 illustrates the even decrease in the percentage of the thicker beds of coal being mined and the correspondingly even increase in thin beds. There seems to have been greater development in the thin beds in this region than in any of the previously described regions, for Fig. 41 shows that in 1922 about 5.5 per cent of the beds were under 2 ft. thick. This may be due to the fact that strippings uncovered both thick and thin beds. Unfortunately the data available do not make this point clear.

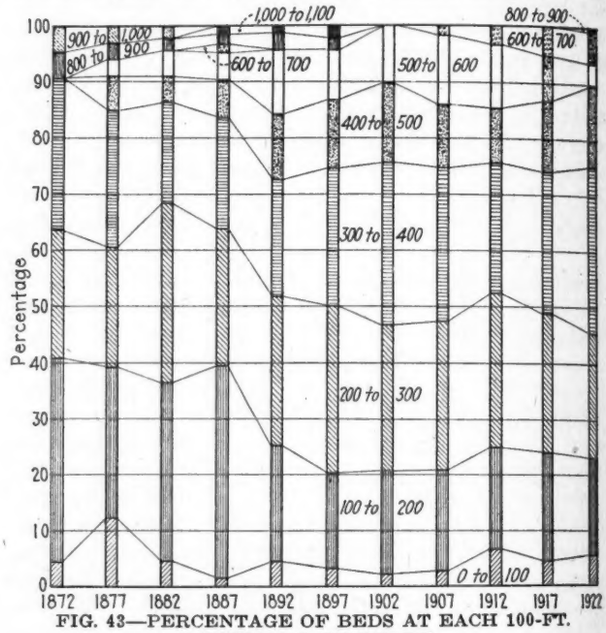


FIG. 43—PERCENTAGE OF BEDS AT EACH 100-FT. INTERVAL OF DEPTH

The method of calculating this curve was described under Fig. 6 in the first part of this article (*Coal Age*, Vol. 23, p. 325).

The average depth of workings in the Eastern Middle field has been affected by the local conditions at one of the operations. As a result the curve in

TABLE XXXIII—POWER INSTALLED AND RELATIVE COAL PRODUCTION

	Boiler Horse Power Installed	Engine Horse Power Installed	Tons per Boiler Horse Power	Tons per Engine Horse Power
1877	25,110	15,085	0.78	1.297
1882	32,670	28,875	0.663	0.749
1887	34,280	.....	0.536	.....
1892	41,550	.....	0.644	.....
1897	39,870	.....	0.741	.....
1902	38,328	33,868	0.683	0.774
1907	62,470	67,493	0.451	0.418
1912	56,210	51,857	0.439	0.476
1917	59,925	46,077	0.444	0.579
1921	49,365	.....	0.510	.....

Fig. 42 does not show the exact conditions as they exist in the field. Generally speaking the depth of the beds is not great, the deepest reported being between the 1,000- and 1,100-ft. intervals, as is shown in the curves in Figs. 43 and 44. The vast majority of workings lie above the 500-ft. interval.

Figs. 43 and 44 show that from 1872 to 1897 there were some rather deep workings in this field. These old workings eventually were abandoned but not exhausted. If they had been omitted from the calculations in the earlier periods, then the curve would have been nearly level, possibly showing a slight increase in depth instead of a decrease. As these deep workings were at a colliery of large production and their depth was weighted with the other depths, their effect on the curve was great. In the earlier period there were two large strippings which since have been practically abandoned. If the data from these operations had been included the depth curve would have shown a decided increase. The easy strippings in this district are becoming exhausted and a growing proportion of the total production is coming from deep mines.

A good many mines in this field have been electrified in recent years with a consequent increase in power consumed. Although steam plants installed in 1921 fell 10,000 b.hp. short of the total installed in 1917, the curve in Fig. 45 indicates an increase in the amount of coal produced per boiler horsepower. Central-station power accounts for this. This same increase in a much less degree is shown in the period from 1912 to 1917. Coal produced per boiler horsepower increased 0.005 ton.

Previous to 1912 the curve shows an almost steady decrease from 1897 and it is reasonable to suppose that this decrease would have continued were it not for the fact that the tendency among coal companies was to forsake mine steam plants for purchased power.

The mule-haulage curve in Fig. 46 shows that the tons of coal hauled per mule steadily declined until 1897. This means that haulage distances were growing. Since then the coal hauled per mule has steadily increased. At first this increase was gradual, then it rose sharply with the introduction of electric locomotives in 1902. Electric haulage probably appeared before 1902, but no inspectors' reports mentioned it until then. From 1917 to 1922 there was a drop in the tons of coal hauled per mule per day.

The locomotive curve shows a continual rise in the number of underground locomotives per 100,000 tons of coal produced. As was to have been expected, the last four years showed a sharp rise in this curve.

The coal lies to a great extent in heavy pitches. Instead of running mine cars into the rooms, they can be loaded by gravity from the breasts in some cases. This restricts the use of the locomotive to main-line

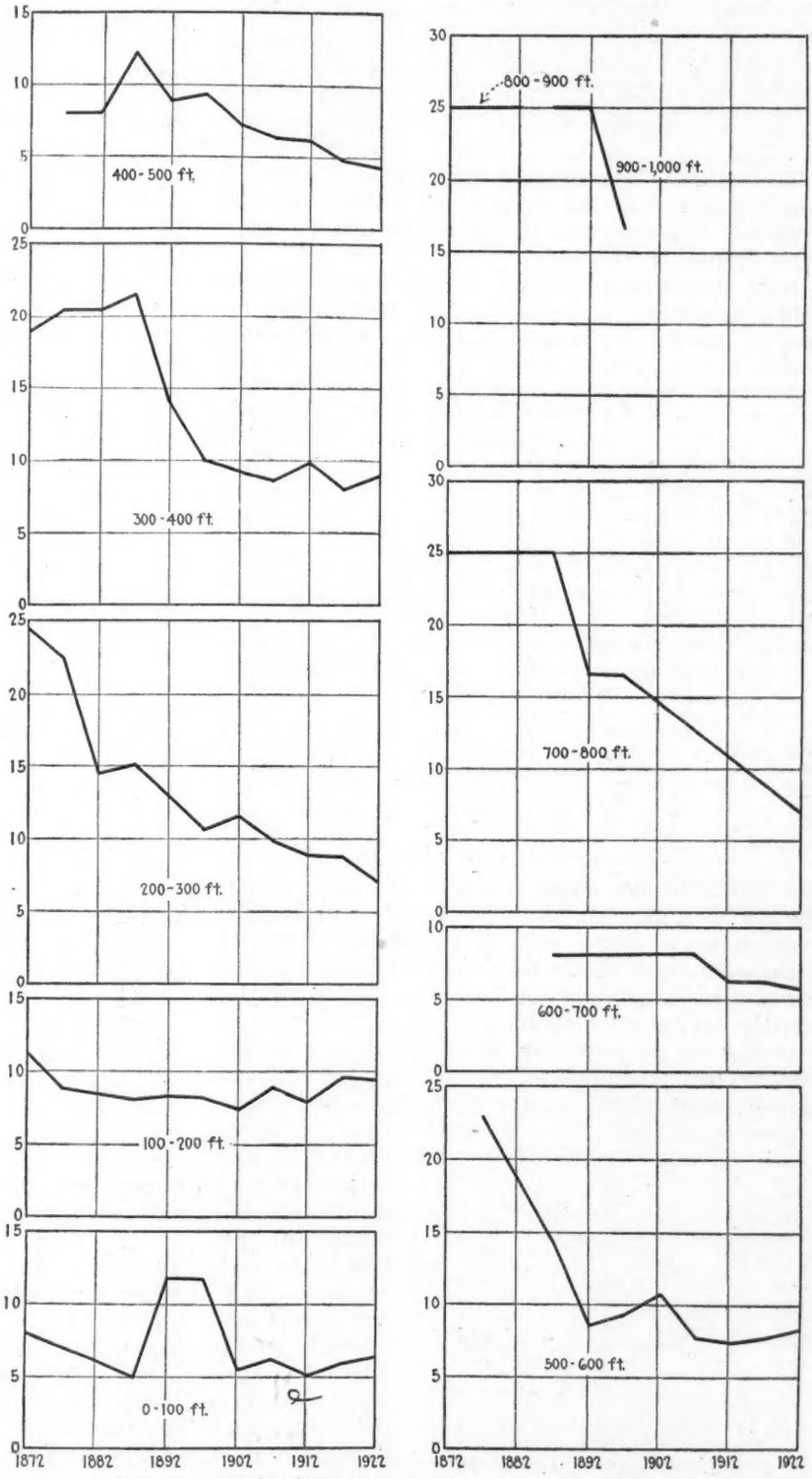


FIG. 44—AVERAGE THICKNESS OF BEDS BY 100-FT. DEPTH INTERVALS

A description of the method used in the calculation of this curve will be found in the footnote to Fig. 7 in Part I of this series of articles (*Coal Age*, Vol. 23, p. 326). This is a diagrammatic representation of how the depth of the workings changed and also how the thickness varied at the same time. Here can be seen the influence of a few deep workings on the curve in Fig. 42 during the early period of the operations.

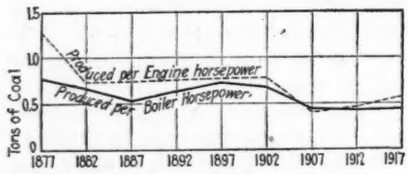


FIG. 45—DAILY PRODUCTION PER BOILER HORSEPOWER AND ENGINE HORSEPOWER

A full description of the method used in calculating this curve will be found under Fig. 8 in Part I of this series (*Coal Age*, Vol. 23, p. 326). Table XXXIII gives some of the important data used in the calculating and the plotting of this curve.

haulage. There is some flat mining in the region, however, and the use of a few locomotives, especially storage-battery locomotives, at certain operations reduces the amount of coal hauled per locomotive.

The general impression of this region is that the length of haul is on the decrease and probably will continue so. Unfortunately it was not possible to obtain exact figures on this.

Most underground mining in the Eastern Middle field is on pitches. Since much coal is loaded into mine cars by gravity, the natural supposition would be that the production per employee would be higher than in the northern districts of the anthracite region. This supposition is borne out in comparison with the Lackawanna and Wilkes-Barre districts, but the four big modern collieries of the Nanticoke district put that territory's production ahead.

TABLE XXXIV—NUMBER OF MULES AND LOCOMOTIVES AND THEIR TONNAGE PERFORMANCE

	Number of Mules	Daily Tonnage per Mule	Number of Locomotives	Locomotives per 100,000 Tons of Output per Year
1877	943	20.77	..	....
1882	1,386	15.10	..	....
1887	1,460	12.56	..	....
1892	1,805	14.59	..	....
1897	1,848	15.96	..	....
1902	1,545	16.92	11	0.14
1907	1,477	19.02	18	0.21
1912	1,096	22.50	39	0.53
1917	1,016	26.22	53	0.66
1921	1,090	23.10	80	1.06

TABLE XXXV—PRODUCTION AND DAYS WORKED IN MIDDLE EASTERN FIELD

	Production	Days Worked		Production	Days Worked
1872	911,771	...	1902	2,758,655	120
1877	2,032,306	194	1907	6,398,023	232
1882	4,949,835	224	1912	6,213,167	233
1887	4,170,708	211	1917	7,030,442	291
1892	4,664,643	226	1921	6,112,997	277
1897	4,608,672	171			

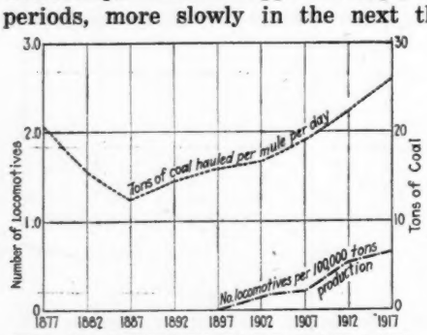


FIG. 46—AVERAGE DAILY HAULAGE PER MULE AND THE NUMBER OF UNDERGROUND LOCOMOTIVES PER 100,000 TONS PRODUCED PER YEAR

In Table XXXIV will be found the data relating to these curves. The method used in calculating them will be found under Fig. 9 in the first article of this series (*Coal Age*, Vol. 23, p. 327).

the following three, when strippings and deep mines began to feed coal to the same breakers, but the figure decreased in the final two periods. Production has dropped from 2.81 tons in 1877 to 1.95 tons in 1921, or a decrease of 30.6 per cent.

TABLE XXXVI—AVERAGE DAILY PRODUCTION PER EMPLOYEE IN MIDDLE EASTERN FIELD

	Total Employed			Inside Men			Outside Men		
	Reported	Corrected for Sizes	Corrected for Time	Reported	Corrected for Sizes	Corrected for Time	Reported	Corrected for Sizes	Corrected for Time
1877	2.38	3.20	2.81	4.02	5.40	5.08	5.90	7.92	6.34
1882	2.16	2.87	2.48	3.71	4.93	4.54	5.13	6.82	5.46
1887	1.76	2.13	1.84	3.64	3.67	3.36	4.19	5.06	4.05
1892	1.72	2.05	1.77	3.07	3.65	3.36	3.99	4.74	3.80
1897	1.92	2.20	1.90	3.25	3.73	3.42	4.62	5.31	4.25
1902	1.80	1.90	1.68	2.94	3.10	2.88	4.65	4.92	4.37
1907	1.92	1.99	1.84	3.02	3.12	2.99	5.28	5.47	4.87
1912	2.13	2.16	2.02	3.14	3.20	3.06	6.60	6.72	5.90
1913	2.03	2.07	1.93	3.06	3.12	2.98	6.12	6.23	5.54
1917	2.07	2.07	2.07	3.25	3.25	3.25	5.68	5.68	5.68
1921	1.95	1.95	1.95	2.98	2.98	2.98	5.61	5.61	5.61

The middle set of curves in Fig. 47 indicates a 43-per cent decrease in output per day per inside employee. From the dot and dash line, illustrating the final corrections for both sizes of coal and the change in time it is found that there has been a steady decrease in the output per inside man employed from 1877 to 1902 and then an increase to 1917 and another drop to 1921. The total decrease was from 5.08 tons in 1877 to 2.08 tons in 1921. It is probable that the inclusion of stripping coal here again accounts for the increased production from 1902 to 1917. In spite of the whole period's decrease, the production per inside man is about 20 per cent higher than in the Lackawanna, Wilkes-Barre and Nanticoke districts. The upper part of Fig. 47 indicates the output per outside employee. This curve shows what might have been expected to happen in a period when such progress was made in the preparation of coal. In the earlier years there was a steady falling off in production, due to a reduction of efficiency and to the necessity for better preparation of coal by the addition of more pickers, since there was no mechanical means for cleaning coal in those days. Naturally production per man dropped.

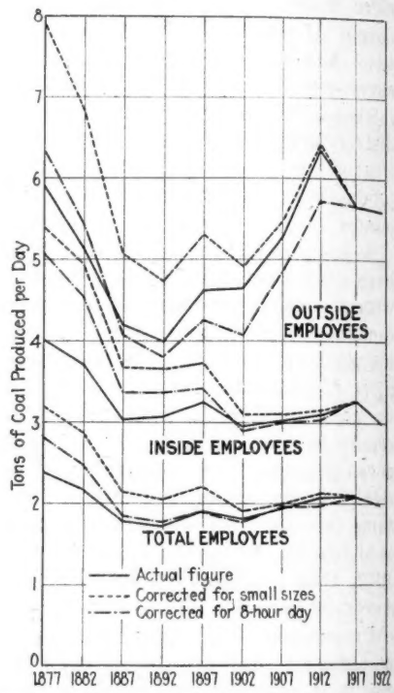


FIG. 47—AVERAGE DAILY PRODUCTION PER EMPLOYEE IN MIDDLE EASTERN FIELD PER INSIDE MAN AND PER OUTSIDE MAN

These curves are corrected for the estimated amount of small-sized coal that went into the culm banks in the earlier years and also for the introduction of the nine- and eight-hour day. These calculations are explained under Fig. 10 in the first article in this series (*Coal Age*, Vol. 23, p. 327). The sizes of coal produced in this region were obtained from very accurate information. These figures were procured in detail for each of the different districts that have been and will be discussed.

In the late seventies mechanical means of cleaning the coal were beginning to be introduced and from 1892 to 1897 the daily production per man employed showed

TABLE XXXVII—AVERAGE DAILY PRODUCTION OF INSIDE MEN IN ASTERN MIDDLE FIELD

	Miners and Miners' Laborers		Inside Company Men		
	Reported	Corrected for Time	Reported	Corrected for Sizes	Corrected for Time
1877	5.23	7.03	16.40	22.1	17.70
1882	5.70	7.57	10.71	14.3	11.40
1887	4.79	5.79	8.32	10.81	8.10
1892	4.65	5.53	8.98	10.69	8.55
1897	5.18	5.96	9.02	10.36	8.57
1902	4.58	4.84	7.96	8.41	7.48
1907	4.67	4.84	8.58	8.86	7.90
1911	4.82	4.91	9.00	9.20	8.16
1913	4.57	4.65	8.94	9.10	8.10
1917	4.88	4.88	9.81	9.19	9.81
1921	4.39	4.39	9.10	8.19	0.10

an upward trend, which continued without interruption until 1912. From this period there has been no increase in the district.

Comparing this production curve with those in the previous articles of this series it is plain that in the Eastern Middle field the output per outside man is about two tons a day less than in either the Lackawanna or the Wilkes-Barre field and approximately three tons less than in the Nanticoke field. There are reasons for this. In pitch mining the rock cannot be separated in the mine because the coal is run out of chutes directly into the mine cars. Therefore this operation has to take place in the breaker and more hand picking is required. Also more men are required for the disposal of the mine rock after it is picked out.

It has been mentioned previously in this discussion that the strippings could not be entirely separated from the underground mining. This further increased the outside forces and therefore reduced the tons of coal produced per outside man.

The true comparison in the districts treated in this series of articles is not between the amount of coal produced per outside man but in the increase in the amount of coal produced. In the Eastern Middle field the production increased from 3.80 tons per man in 1892, the lowest production year, to 5.61 tons in 1921, or an increase of 47.7 per cent. The Lackawanna County district shows a gain of 46.8 per cent; the Wilkes-Barre district, 47.8 per cent, and the Nanticoke district, 75 per cent. This is the highest increase that has so far been brought out, except in the four modern Nanticoke collieries, which showed a gain of 294 per cent. This comparison shows that although the Eastern Middle field increase in production has been good there is still considerable room for improvement, as its increase has been exceeded by almost 50 per cent by the one district in the Northern field wherein conditions are similar—Nanticoke.

The bottom set of curves in Fig. 48 shows the production per day per miner and miner's laborer. Only the final curve corrected for size of coal will be discussed. This is represented by the dot and dash line.

There is a steady downward trend to the year 1902, assuming that data for the year 1897 is in error and the average for 1892 and 1902 is considered instead. From 1902 on, the curve becomes level until 1917. Then there is a considerable drop to 1921.

What sustained the production of the miner and miner's laborer from 1902 to 1917, when in the previous periods there had been a heavy drop? In the discussion of the depth curve in Fig. 42 it was brought out that at about 1902 there was a marked change in the method of mining. The old and wasteful methods were abandoned. Second mining was adopted. Work was more concentrated, thus reducing the length of haul and giving the miner a better turn, therefore increasing his output. The curve also is affected by the inclusion of some stripping coal in the last few years, as has been explained. Comparing this curve with the three previously described districts, it is found that the output per miner and miner's laborer is about one ton more in the Eastern Middle district than in either the Lackawanna or the Wilkes-Barre district but only about half a ton more than in the Nanticoke district, where all the data are influenced largely by the four modern collieries so frequently mentioned. This greater output per miner and miner's laborer is largely due to gravity loading underground. The Lackawanna district shows a decrease of about 43.7 per cent in the output per miner and miner's laborer. The Wilkes-Barre district decrease is 42.9 per cent, and that of the Nanticoke district 54.2 per cent. The Eastern Middle District shows a drop of only 37.9 per cent.

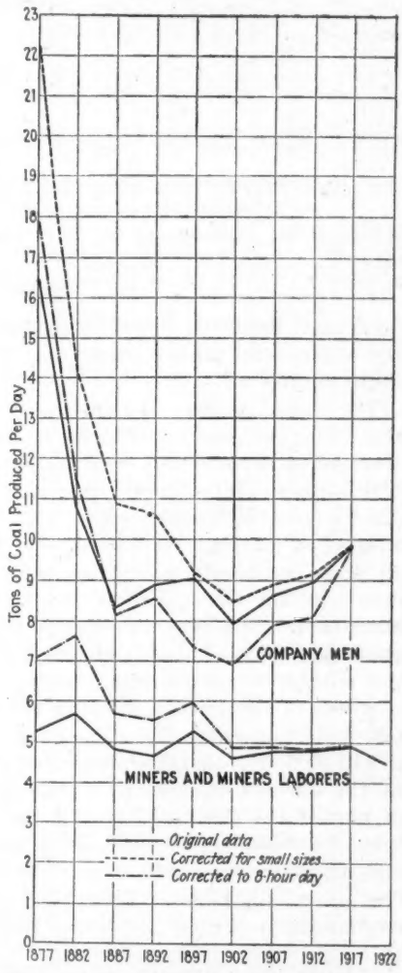


FIG. 48—AVERAGE DAILY PRODUCTION FOR INSIDE EMPLOYEES OF MIDDLE EASTERN FIELD

Corrections are shown for miners and miners' laborers allowing for small sizes not shipped in earlier years and for the introduction of the nine- and eight-hour day in the case of inside company men. In making the calculations it was found that the year 1912 was incorrect, so the points in 1911 and 1913 were calculated and plotted and a line drawn connecting these two points. At the place where this line intersected the vertical division line was considered the correct figure for the year 1912.

TABLE XXXVIII—MEN EMPLOYED IN EASTERN MIDDLE FIELD

	Total Employees	Inside Employees	Outside Employees	Miners and Miners' Laborers	Inside Company Men
1877	7,660	4,555	3,105	3,439	1,116
1882	10,268	5,953	4,315	3,886	2,067
1887	11,224	6,500	4,724	4,128	2,372
1892	12,007	6,742	5,166	4,440	2,302
1897	14,044	8,201	5,843	5,211	2,990
1902	12,760	7,817	4,943	4,925	2,892
1907	14,309	9,121	5,178	5,909	3,212
1912	13,688	9,389	4,299	5,945	3,444
1917	10,517	6,681	3,836	4,462	1,219
1921	11,399	7,449	3,930	5,024	2,424

The upper set of curves in Fig. 48 gives the average daily output per inside company man. Here there is a tremendous drop, particularly in the earlier years. This output declines to 1887; then it levels off for two periods and takes a final drop in the period ending 1902. From

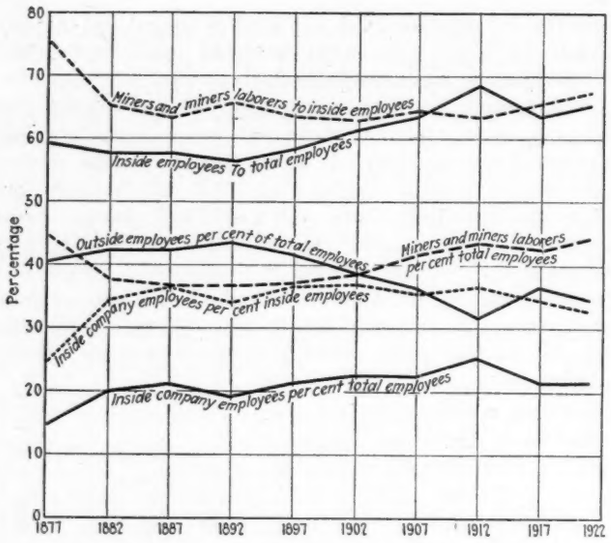


FIG. 49—PERCENTAGE OF EMPLOYEES BY CLASSES IN EASTERN MIDDLE COAL FIELD

Refer to Fig. 12 in the first article in this series (*Coal Age*, vol. 23 p. 329) for a description of the methods used in calculating these curves. The actual number of the men employed is shown in Table XXXVIII and the percentages in Table XXXIX.

this point the curve shows an increased output per man and reaches its highest point in 1917. Then there is a slight falling off.

The output in this district in the earlier years probably is 60 per cent higher than in any of the previously described districts, and even in 1921 it is about 30 per cent higher. Why should this condition obtain? The cause of the difference can be attributed mainly to the method of mining. In the earlier period the work was all done in the steep pitching beds. Here it was unnecessary for the driver to enter the rooms to get the mine cars. The coal was loaded into the trips on the gangways from chutes from the breasts. This reduced the number of mules and drivers. Some hint of this is given in the curves showing the tons of coal hauled per mule per day. By comparing the different curves it will be found that the amount of coal hauled per mule in the earliest periods is higher in this district than in any of the others. But this does not tell the whole tale. In this district the haulage was gangway haulage and therefore more mules were used per team than in the other districts. Therefore fewer drivers were needed and naturally the output per man was higher.

Heavy Pitches, an Advantage in Operation

As the change in mining methods came the flatter beds were developed and the average size of the teams decreased. Therefore the number of drivers increased. This, therefore, decreased the amount of coal produced per man. Even now a considerable part of the coal hauled is loaded from chutes and the number of haulage men is less in this field than in the fields where the beds are flatter. The drop in output per inside man has been 48.6 per cent, which is greater than in the Lackawanna County district, where the decrease was 40.2 per cent; the Wilkes-barre district, 40.5 per cent, or the Nanticoke district, 8.4 per cent. A greater decrease in this district is to be expected; as mining conditions have changed considerably, while in the other districts they have remained more nearly the same. Reduction in the Nanticoke district has been retarded by the opening of new mines.

TABLE XXXIX—PERCENTAGE OF VARIOUS CLASSES OF EMPLOYEES TO TOTAL EMPLOYED

	Inside Men	Outside Men	Miners and Miners' Laborers	Inside Company Men	Miners and Miners' Laborers (a)	Inside Company Men (a)
1877	59.5	40.5	44.9	14.6	75.4	24.6
1882	57.8	42.2	37.8	20.0	65.5	34.5
1887	57.9	42.1	36.8	21.1	63.5	46.5
1892	56.2	43.8	37.0	19.2	65.9	34.1
1897	58.4	41.6	37.1	21.3	63.6	36.4
1902	61.2	38.8	38.6	22.6	63.0	37.0
1907	63.7	36.3	41.3	22.4	64.8	35.2
1912	68.6	31.4	43.4	25.2	63.5	36.5
1917	63.5	36.5	42.4	21.1	65.8	34.2
1921	65.5	34.5	44.1	21.4	67.4	32.6

(a) Percentage to total inside employees.

In this district, as in the others, the number of the outside employees has continued to decrease in proportion to the total employed. This is due mainly to the introduction of modern methods of preparing coal. The district has some modern breakers which have considerably reduced the number of preparation employees.

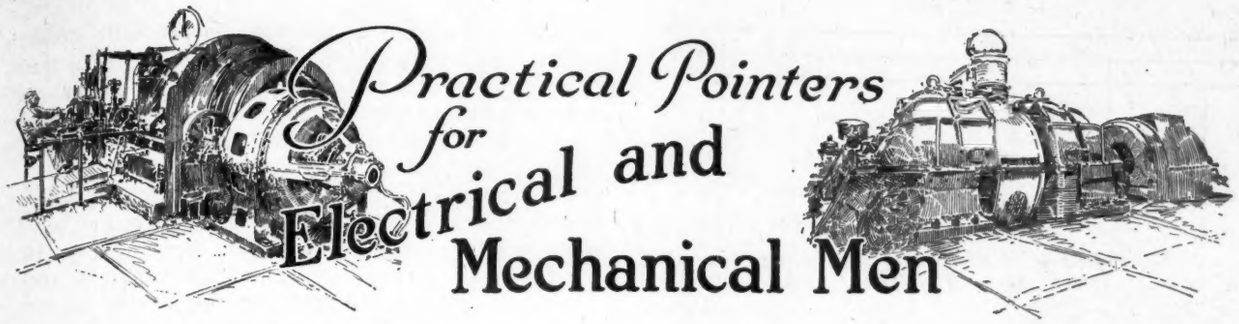
From 1882 to 1902 there was practically no change in the number of miners and miner's laborers but when the character of the mining changed in this period the number increased. This may have been caused entirely by the change in mining methods, or partly by the opening of the thinner beds or by a decrease in the efficiency of the men. Who can fix the proportion of each cause?

Underground Communication by Radio

SEVERAL months ago experiments in underground transmission of the human voice by radio were carried on under the auspices of the U. S. Bureau of Mines, but it was found that natural and artificial interferences—the latter caused by the presence of steel and electrical equipment in the mine—partly frustrated their success. The practicability of underground communication by the wireless telephone had not been indubitably established until recently, when broadcasts from local stations in New York were received aboard a subway train in the East River Tunnel. The success of the experiment is the more remarkable when one considers that much steel is used in subway construction and other disturbances are set up by the inductance from electrical apparatus.

The coal industry is not so much interested in this feat as an accomplishment of science as in the possibility of radio-transmission of the human voice in a mine. Wireless telephony when more perfect probably will remove many objectionable features of our present systems of communication, in which broken circuits caused by roof falls, grounding and leakage through a wet condition about the bare telephone wires make them unreliable. Granting that further refinements in radio will be made we may be optimistic in the belief that some day mine locomotives will be dispatched without wires and the work of mining be otherwise regulated. It is conceivable that the greatest possibilities lie in directing safety and rescue work in mine disasters. Men trapped in remote parts of a mine by explosion or fire could often be saved were it possible to establish communication with the surface as by wireless.

The first step in recognition of the applicability of radio to mining is its adoption for communicating market news and orders from the main offices to isolated mining towns, as is now being done in certain parts of Kentucky.



Practical Pointers for Electrical and Mechanical Men

Starting Synchronous Motors

SYNCHRONOUS motors may be started in any one of several methods. One method usually is selected before the motor is designed and this selection afterward determines the method of starting which is normally used for that particular motor; under certain conditions, however, either one of several methods may be employed.

Most synchronous motors in service around the coal field are used on synchronous motor-generator sets furnishing direct current to the haulage motors, coal-cutting machines, etc. These machines frequently are self-starting, this being possible owing to the fact that it can be very easily accomplished because the synchronous motor is invariably started under no-load.

In the design of the motor an extra winding called a squirrel-cage winding is put on the face of the poles of the rotating field. This winding is used only for starting duty and for this reason it has a relatively low capacity—by this we mean that it can be used only for starting duty and not for carrying any of the direct-current load of the motor-generator set.

In order that the squirrel-cage winding of the synchronous motor shall properly function it is necessary that its resistance be maintained as low as possible, the principle of its operation being exactly the same as that when inserting resistance in the rotor winding of a slip-ring motor to reduce its speed.

An occasional difficulty experienced with this type of synchronous motor is that the starting winding does not bring the motor up to full speed. In this event the trouble usually can be found in the squirrel-cage winding. What has happened is that the resistance of the winding has increased. Fortunately, this condition may be easily remedied by going over the winding and cutting down the resistance of any loose joints. These loose joints often may be located by starting the motor and then shutting it down and feeling the winding for any hot or warm joints.

On account of the large current which would be drawn from the line at the moment of starting if full-line voltage were thrown directly on the motor, a lower voltage is first applied and after the motor has reached full speed full potential is applied. This is accomplished by the use of a compensator, which is essentially an auto-transformer. On low- and moderate-capacity motors the self-contained compensator is used, while for large capacities compensator coils and oil switches are used.

Knotty problems pertaining to equipment and material for special purposes are matters of frequent occurrence with electrical and mechanical men at coal mines. These usually require special handling. Send your experiences and solutions, as well as your questions, to Coal Age. The exchange of such ideas makes the most helpful kind of Practical Pointers.

How to Start Synchronous Motors

The standard method of starting synchronous motors is as follows:

(A) Open the field switch completely if the excitation voltage of the motor is 125. If the excitation voltage is higher than 125 the field switch should not be opened completely but left in the clips connected to a discharge resistance. This prevents any high induced voltage across the collector rings. Exception to the above—if the motor is part of a motor-generator set—the field switch should be left in the clips connected to the discharge resistance irrespective of what the field excitation is.

(B) Throw compensator lever to "start" position.

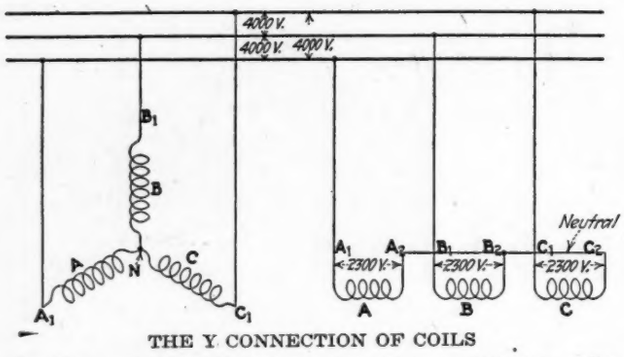
(C) After the motor has reached constant speed close the field switch; the field rheostat having been previously adjusted to give a field current corresponding approximately to no-load normal voltage, with machine running as a generator. This will cause the rotating field to step in and lock with the stator field poles either quietly or noisily, depending upon whether the squirrel-cage winding has brought the rotating field up to proper speed and the relative position of the stator and field poles at the time the field switch is closed, thus changing the motor from an induction motor to a synchronous motor.

(D) Throw the compensator lever quickly to the "run" position.

The Y Connection Made Clear

A VERY common connection used on alternating current three-phase lines is the Y—sometimes called star—connection. As its name suggests, it is in the form of a Y. This, like the delta connection, may be used in connecting three similar coils to a three-phase alternating-current system. It is used for transformers, motor windings, relay connections, etc.

The important point about the Y connection is that the coils to be connected do not have the same voltage rating as the line wires to which they are to be connected, yet the voltage rating of these coils must bear a certain quite definite ratio to that of the line voltage. This value is equal to the line voltage divided by 1.73;



THE Y CONNECTION OF COILS

In this connection one end of each coil is connected to a line wire while the other ends are joined to a common point called the neutral. This neutral point may or may not be grounded, depending on the plan adopted for the system.

for example, transformers or coils to be connected in Y to a three-phase alternating-current system of 4000 volts must have a voltage rating for themselves of 4000 ÷ 1.73 = 2300 volts. Therefore, we see that 2300-volt coils may be connected to 4000-volt lines if they are first properly connected in Y.

The drawing shows both a schematic and the usual arrangement of the Y connection. Note that the voltage of the coils is 2300 and the voltage of the lines is 4000.

It is important also to note that the same respective ends of the windings are connected to the neutral wire, while the other end is connected to one of the phase wires. Note also that both ends of no coil are directly connected to the line wires as in the delta connection.

To increase the amount of power which can be transmitted over a given line, without changing the size wire, the voltage frequently is raised. If the equipment connected to the original voltage were all delta connected the line voltage could be increased 1.73 times the original and the delta-connected equipment could be connected in Y. This would allow the use of the same equipment and eliminate the necessity of buying complete new equipment for use on the higher voltage. It is therefore obvious that where a line was originally 2300 volts and all the equipment was delta connected the line voltage could be raised to 4000 and the original delta-connected equipment could be still used if connected in Y. Of course the line insulation and equipment insulation would have to withstand the higher value of test voltage.

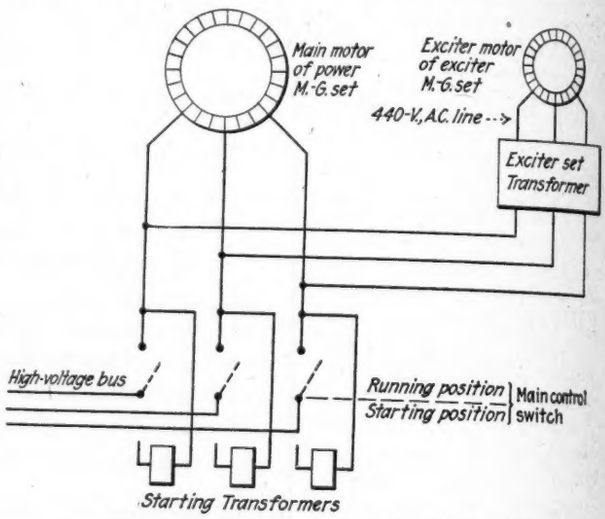
How to Simplify the Control of Exciter Units for Synchronous Motors

OCCASIONALLY a circumstance arises where a synchronous motor-generator set is installed where the generator voltage of the direct-current generator is not suitable for exciting the synchronous field of the motor. This may occur where the mines are quite extensive and the haulages long, thus requiring 500 volts for the trolley system. In this case it is necessary to obtain suitable voltage to excite the synchronous field from some other source than the 500-volt generator, as this high voltage is not practical for excitation wherever it can be avoided.

The motor voltage under these conditions probably would be 2,300, 4,000 or 4,600. Under these conditions it usually is necessary to install a separate motor-generator set to obtain suitable direct-current voltage to excite the synchronous field. Owing to the small capacity of this exciter motor-generator set the alternating-current motor must be operated on 440 volts alternating current or less. This therefore requires a transformer for stepping the main alternating-current voltage down to that required for the exciter motor and also some form of starting and controlling equipment for the exciter motor-generator set.

To eliminate the added expense of starting and control equipment for the exciter set a scheme of connections was developed by a certain large coal company whereby the motor of the exciter set was always directly connected straight through to the secondary of its supply transformer and the primary of the transformer was connected permanently to the motor leads of the motor of the large motor generator set which supplied the haulage system.

The result of this method of connection was that when the starting voltage was applied to the motor of the large motor-generator set the primary of the



CONTROL OF EXCITER SET IS AUTOMATIC

The starting of the large motor-generator set will also bring the exciter motor generator up to speed without any additional operations of the attendant. When the large machine is across the full line voltage the little machine gets full normal voltage.

exciter set transformer received this same starting voltage, which in turn applied a low starting voltage to the exciter-set motor. Later when the large motor-generator set was up to speed and the full line voltage applied to the large motor the exciter transformer also received full line voltage on its primary and thus gave full normal secondary voltage to the exciter motor.

The application of the exciter voltage to the synchronous motor obviously was not affected in any way by this scheme and the operation of the complete equipment was made both cheap and simple; in fact, the scheme greatly reduces the equipment to be maintained and also makes the starting and stopping more nearly automatic.

PERMISSIBLE STORAGE BATTERY LOCOMOTIVE.—The design, construction, inspection and test for permissibility of a storage-battery locomotive outfit intended for use in gaseous mines represents a large amount of work, first on the part of the locomotive manufacturer and secondly on the part of the Interior Department. Detailed information of the first investigation of this nature is presented in Serial 2,449, by L. C. Ilsley, electrical engineer, and H. B. Brunot, junior electrical engineer, which may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

Insulation Resistance Can Be Measured by Use Of Ordinary Direct-Current Voltmeter

Electrical Equipment in Coal Mines Must Withstand Adverse Conditions—Numerous Factors Affect Insulation of Equipment—Insulation Resistance Can Be Measured Without Use of a Megger—Suggestions for Maintaining Insulation Resistance

By E. J. Gealy
Associate Editor, *Coal Age*

THE unfavorable conditions under which electrical equipment about the coal mines is called upon to operate are not always seriously considered and fully appreciated. In places the dust may collect on a motor and clog the air passages and vents, may fall upon oil switches and form a heavy carbon conducting surface for current leaks, may enter the transformer case and cut down the insulating quality of the oil. The moisture in mines, having a relatively high humidity, may keep the electrical equipment continually damp, causing parts to rust and insulating material to swell. Even in places where the moisture content of the mine air is not very high considerable moisture may be splashed on the electric equipment by being brought into the mines on a rainy or snowy day. Especially is this true where a hoisting cable is run over the outside surface or where water may leak from pumps or water lines. In some mines the track is continually in a condition comparable only to that prevailing on roads during rainy weather in a muddy country district. Then again sand used on the rails may easily be picked up, due to the low clearances under haulage motors, and may be carried into the bearings of the equipment. Also the mechanical equipment driven by electric motors frequently, of necessity, is of a type that produces considerable vibration.

Electric Equipment Requires Close Inspection

All these conditions make it imperative that electric equipment be given close inspection and supervision in order to avoid breakdowns and detect possibilities of failures that might result in costly delays.

One of the most important things about any piece of electrical equipment is the insulation. Electrical insulation must resist heat, moisture absorption and mechanical breakage. Likewise it must be durable and have a high dielectric strength, or, in other words, a high resistance.

It is therefore necessary to maintain the resistance quality of all insulating material as high as possible in order to prevent breakdowns. It is not only necessary for an electrician or electrical engineer to be able to repair a breakdown to his electrical equipment when it occurs but his most productive efforts are those which result in detecting and avoiding mechanical or electrical breakdowns and thus reducing the expensive consequences which usually follow such breakdowns.

The insulation resistance of electric equipment such as cables, conductors, electric machines and transformers, is sometimes measured and used as a rough indication of the condition of the insulation. It is that resistance measured between the current-carrying parts and the frame of the machine or exterior surface of the conductor. Since large machines or cables have much greater areas of insulation, their insulation resistance will be proportionately lower than for small machines or pieces of cable, yet the insulating material may be in exactly the same condition.

The insulation resistance of any machine will be much lower when hot than when cool, especially when the machine is rapidly heated. A moderate size of low-voltage motor, as usually insulated, when warm from carrying full load, should show an insulation resistance of about 1,000,000 ohms, or, in other words, about one megohm. When cold, the insulation resistance should be many times this amount.

To measure such high values of resistance an electrical instrument called a "megger" is frequently used; it is possible, however, to measure insulation resistance by the use of a supply of direct current from 100 volts or higher and a voltmeter with a reasonably high internal resistance.

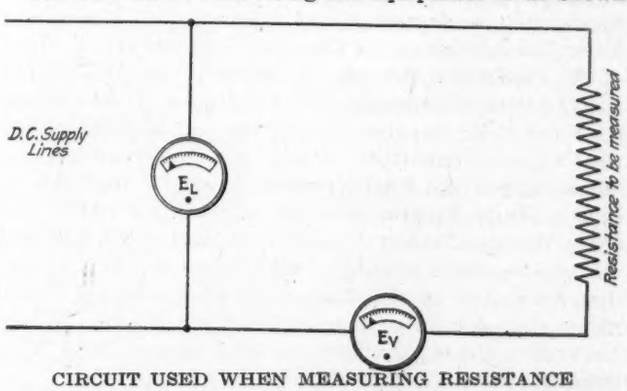
The method of measurement is first to read the voltage of the line, then to connect the resistance to be measured in series with the voltmeter and take a second reading. For measuring the insulation resistance of an armature the positive line would be connected to the voltmeter and then to the winding, while the negative line would be connected to the armature shaft or laminations.

The measured resistance is then calculated by using the following formula:

$$R = \left(\frac{E_L}{E_V} - 1\right) N.$$

R = resistance in ohms;
E_L = line voltage;
E_V = voltage recorded on voltmeter when in series with the resistance to be measured;
N = resistance of the voltmeter in ohms (this value can usually be found on the cover of the voltmeter box).

The method of connecting the equipment is as shown



CIRCUIT USED WHEN MEASURING RESISTANCE

Voltmeter E_L measures the line voltage. E_V actually measures the small current leakage through the resistance. E_L and V may be the same meter used in the two positions shown by first taking reading E_L, then E_V, being careful to keep voltage E_L constant throughout the test.

in the accompanying figure. An example of making such a test would be to have a 110-volt direct-current supply and an internal resistance of 11,000 ohms in the voltmeter used. The voltmeter reads 110 volts in the first position and 5 volts in the second position.

$$E_L = 110, \quad E_V = 5, \quad N = 11{,}000$$

$$R = \left(\frac{110}{5} - 1 \right) 11{,}000 = 242{,}000 \text{ ohms}$$

or approximately ¼ megohm, which is very low.

It is obvious that when making this test with a direct-current supply which operates with one line grounded, the grounded line should be connected to the grounded frame or shaft of the equipment to be tested; otherwise, grounding the ungrounded line from the generator would result in a short-circuit.

Pieces of electrical equipment after standing idle for a time absorb moisture; this is especially true during times of suspension. Before placing the equipment into service it is highly desirable to make an insulation-resistance test. If the resistance is low the best thing to do is to heat the insulation slowly to dry it out.

To maintain the insulation resistance of important pieces of electrical equipment forced to be idle or lay as spares it is advisable to keep the insulation warm and dry by connecting it to a circuit of reasonably low voltage and allow a small amount of current to pass through the windings.

Book Reviews

British Coal Mining Industry in the War

MUCH interest has been evinced in America in the methods adopted by the Government of Great Britain and Ireland for the regulation of the coal industry during the war. The measures of socialism then put in operation formed the basis for much of the legislation enacted here when we also aligned ourselves with the Allies in the conduct of the struggle.

In every man can be found in greater or less degree that sense of social obligation on which the British Government so freely relied. It forms, in fact, the gold in the natures of all of us, but it is so heavily alloyed with individualism that as a rule it can form only a spurious currency on which to conduct business. During the war the percentage of social obligation reached such a high figure that it was almost possible to coin it into a basis for social conduct, yet some, like Whitley, were venturesome enough to believe it might be found, not only during the war but afterward, an acceptable substitute for that individual initiative and personal advantage on which, strange to say, the welfare of mankind has been advanced. Observation during the war and afterward showed how grievous was the mistake of these enthusiasts.

Till Sir R. A. Redmayne published his book on "The British Coal-Mining Industry During the War" no one volume contained a complete review of that subject. Redmayne, as former Chief Inspector of Mines and Technical Adviser to the Controller of Coal Mines, Head of the Production Branch, Chairman of the Coal-Mining Organization Committee, Vice-Chairman of the Central Coal and Coke Supplies Committee and Member of the Coal Export Committee, of the Coal Conservation Committee and of the Fuel Research Board, is well able to give a comprehensive and non-partisan *résumé* of the coal industry of Great Britain both during the war and during the period of control that followed. This he has done on behalf of the Carnegie Endowment for International Peace, in a volume published by the Oxford University Press, of which the local address is 35 West 32nd St., New York City.

In an introductory chapter Sir Richard says that in the United Kingdom at the beginning of the war were about 3,000 mines employing in aggregate 1,110,884 persons, the mines being worked by about 1,500 companies, the royalties being vested in some 4,000 persons. In Great Britain as in America it has been too often the custom for politicians, publicists and the public to ignore the fact that the difference between the cost per ton and the selling price was not the same as profit. Sir Josiah Stamp stated before the Royal Commission on the Coal Mining Industry that the profit in the five years before the war was 59c. on coal costing $1.88—surely a satisfactory return, but unfortunately this made no allowance for depreciation, interest and probably obsolescence, which, if deducted, greatly reduce these profits.

Another interesting table contained in this volume shows the home consumption of coal, and we venture to put alongside it the percentages calculated therefrom, and in the table following a calculation of the percentages of American home consumption.

The war produced at first a stagnation in business and the recruiting of miners was not in any way restricted in 1914. "From no class of the community," says Sir Richard, "did the call of patriotism meet a more spontaneous and conspicuous answer than from coal miners. No less than 191,170 men, or nearly 19 per cent of the total personnel—men, boys and women—employed at the collieries of the United Kingdom, joined the colors during the first seven months of the war. . . . The result is still more eloquent of the patriotism of the miners when it is reflected that these men were drawn only from those of military age—that is, between the ages of 19 and 38. It is estimated that 40 per cent of the miners of military age were absorbed into military service, and by far the greater number of these left the mines in the early weeks of the war—that is, in the autumn of 1914." Their places were partly filled by "50,473 persons from other employments, or approximately 5 per cent of the normal personnel of the coal mines," the output declining 13½ per cent.

It is interesting to note that miners in Great Britain are about as irregular in their working habits as ours. From August to February in 1913, before the war, the absenteeism was 10.3 per cent. After the war commenced, from August to February, 1914, probably owing, we may add, to the fact that coal was not greatly needed for some months, the absenteeism was decreased only to 9.8 per cent. Perhaps 5 per cent of this represented sickness either of the individual or in the home.

The early proposals for the reform of the coal industry were not drastic. The Coal-Mining Organization Committee desired to reduce irregularity of work, to utilize holidays for the production of coal, to suspend the "Eight Hours Act of 1908," under which the men worked barely seven hours; to employ more women, to

TABLE I—BRITISH DOMESTIC CONSUMPTION OF COAL 1913 (CALCULATED)

	Industrial Uses	Short Tons	Percentages
(1)	Railroads	16,800,000	8.00
(2)	Coasting Steamers (bunkers)	2,800,000	1.33
(3)	Factories	67,200,000	32.00
(4)	Mines	21,280,000	10.13
(5)	Iron and Steel Industries	34,720,000	16.53
(6)	Other Metals and Minerals	1,400,000	0.67
(7)	Brickworks, Potteries, Glass Works and Chemical Works	6,440,000	3.07
(8)	Gas Works	20,160,000	9.60
(9)	Domestic	39,200,000	18.67
		210,000,000	100.00

These figures are based on estimates from the Coal Commission's report of 1903 with a *pro rata* increase, except where more definite figures are available. The actual total was 211,783,453 tons.

TABLE II—AMERICAN DOMESTIC CONSUMPTION OF ANTHRACITE AND BITUMINOUS COAL

(Based on F. G. Tryon's table for soft coal consumed in a year of active business, *Coal Age*, Jan. 19, 1922).

Industrial Uses	Short Tons	Percentage
Railroads	153,700,000	24.7
Coasting and Lake Trade Bunkering	3,600,000	0.6
Factories*	206,000,000	33.1
Mines (coal only)	22,360,000	3.6
Iron and Steel Industries†	112,780,000	18.1
Gas Works‡	12,220,000	2.0
Domestic	111,100,000	17.9
	621,760,000	100.0

* Includes categories 3, 6 and 7 in Table I and also public utilities (electric).
† Includes coal for byproduct coke.
‡ Assumes that all the coal made into domestic coke is used at coal-gas plants. Does not include on the other hand any of the anthracite used at gas works.

reduce deadwork and to economize in the use of coal. Holidays were reduced by local agreement, and the eight-hour question, as also that of the employment of women, was solved by local understandings. Only in Lancashire and in Scotland had women been employed. In the other districts women but rarely engaged in mine work. No attempt was made to increase the number for fear of creating trouble with the union.

In the years 1915 and 1916 the government tried to speed up coke production, mainly for the TNT obtainable. "It is on record," says Sir Richard, speaking about conditions prior to the war, "that Germany even occasionally imported coal of high coking quality from Great Britain, extracted the byproducts and exported the coke to England." Soon Great Britain was producing so much coke that she was unable to find uses for it. Byproduct coke could not be burned in open grates or for the raising of steam except under forced draft. Consequently in making arrangements to exchange coal for the materials needed from foreign neutral countries, Great Britain had to stipulate that they take a proportion of coke. This speedily reduced the surplus. Germany also found herself overstocked with the same commodity.

As the war progressed the French began to be short of miners and proposed to the British Government that it send men to operate French mines. But ultimately French miners were brought back from the front. However, the author of the volume reviewed visited France to facilitate the transfer of men and found that many of the mines could be worked only at night as they were being shelled by day and some of the coke workers had to hide in dugouts while their ovens were being bombarded.

Among other extraordinary measures—to us, at least, they seem unusual—was to endeavor to induce the people to use anthracite for domestic heating and cooking. The people believed it could be burned only in a closed stove and took most unfavorably to its use. It had to be started with bituminous coal and when burning should not be poked. Now, an Englishman is never so happy as when he has a poker in hand and is turning over the coals in the grate.

Under the anathematized Dora (Defense of the Realm Act) the Controller of Mines issued an order on March 16, 1918, ordering that no owner of coal mines shall without previous written notice to the Controller incur any expenditure on the following objects: (1) the sinking, widening or deepening of shafts (including shafts that do not come to the surface) or the continuance thereof; (2) the driving of slants or adits for the purpose of hauling coal or the making of cross-measure or rock headings; (3) the opening or reopening of seams; (4) the erection or acquisition of any additional buildings, plant or machinery not strictly required for purposes of repairs or maintenance; (5) the selling or other transferring of the ownership in any mine or part of a mine. This first restriction was seriously considered in the United States and during the war might have been enforced with advantage. It was actually put in effect in Great Britain, and the lack of development considerably hampered production after the war, for England has not for many years had more mines than it needs.

In this review a few of the high lights have been chosen from its 358 pages measuring 5¼ x 9⅝ in. It is an orderly presentation of the events in the coal industry from the somber First of August, 1914, to the glorious Fourth of July, 1921, when the men went back to work after a long and bitter strike.

U. S. Bureau of Mines, Its Legal Status, History, Purpose and Functions

PURSUING its intention of preparing a series of monographs on the various service organizations of the United States Government, the Institute of Government Research has published its third treatise, covering the history, activities and organization of the U. S. Bureau of Mines, beginning with the organization of the Technological Branch of the U. S. Geological Survey, which had its origin in the order of April 2, 1907, of the Secretary of the Interior.

At an even earlier period the U. S. Geological Survey, in accordance with the Act of Feb. 18, 1904, had begun the work of fuel testing, establishing a station at the Louisiana Purchase Exposition in St. Louis and removing later in 1907 to the Jamestown Exposition, at Norfolk, and to Denver, and opening fuel-testing laboratories at Columbus, Pittsburgh and Washington. An immediate cause of the extension of the Technological Branch was found in the terrible coal-mine explosions in December, 1907. Stations for mine-rescue apparatus were established at Pittsburgh, Pa., and Urbana, Ill., in 1908, followed by one at Knoxville, Tenn., and Seattle, Wash. The Bureau of Mines was created by the Act of May 5, 1910.

The U. S. Bureau of Mines has since made co-operative agreements, and in 1920 had thirteen of these contracts with as many public bodies and had greatly extended its activities. These the book undertakes to summarize in detail, giving the laws under which the Bureau operates and a bibliography of the publications dealing with its activities. The book contains 162 pages measuring 5¾ x 8⅝ in. The publisher is the Johns Hopkins Press, Baltimore, Md.

THE FRENCH ARMY seems to be something in the nature of a Fact-Finding Commission.—*Philadelphia Inquirer.*

Problems of Operating Men

Edited by James T. Beard

Timbering High Falls on Entries

Old Entries Often Develop High Roof Falls—Timbers Supported on Collar Beams Set in Hitches Cut in Solid Formation Above Coal

IT HAS been with much pleasure that I have read the several letters of contributors to *Coal Age*, written in response to my inquiry, which appeared in the issue March 1, p. 380. We were then retimbering an old slope that had fallen to a great height in many places. I stated at that time that we made a mistake in the start of the work, by attempting to use double timbering, supporting the collar beams on legs set in the entry.

The sequel has proved that I was right in contending that we had made a bad start. Instead of using the legs to support the collar beams, these should have been set in hitches cut in the rib. At that time, I do not seem to have made myself clear in the matter that these hitches should be cut in the solid formation, say 3 ft. above the coal, instead of in the coal, as shown in my previous sketch.

In order to make the situation clear, I am now sending a few sketches that will serve as a little history of

Fig. 1 Slope as first Timbered

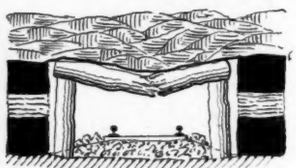


Fig. 2 Weight breaks Collar Beams

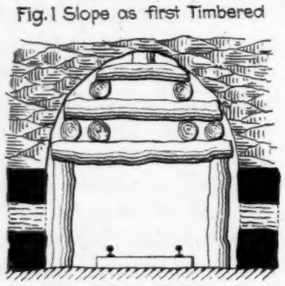


Fig. 3 First Form of Timbering High Roof falls

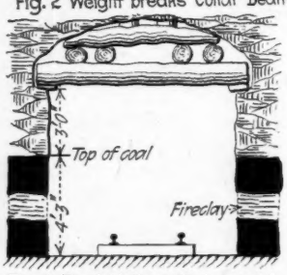


Fig. 4 Final Method that saved Timber and was successful

HEAVY SQUEEZE CAUSES HIGH ROOF FALLS

the work. In my previous letter, I also failed to show that the coal lies in two benches separated by a 15-in. fireclay parting, as indicated in the present sketches.

In Fig. 1 is shown the original slope where the roof supported in the usual manner known as "double timbering." In Fig. 2, is shown what took place some time later and represents the condition of affairs when we started to retimber this old slope.

In Fig. 3, is shown the method we tried first, using double timber with long legs set on the bottom. This was fully explained in my previous letter. Finally, Fig. 4 illustrates what I intended to explain before. Here, the collar beams are shown as supported in hitches cut, in the solid formation, about 3 ft. above the coal. This method has the advantage of doing away with the legs supporting the collar beams in the first plan and avoiding the danger of these legs being knocked out by a derailed car.

In closing, I may add that in places where the coal had been taken out, solid cribs were built on each side of the road and short legs used to support the collar beam in each timber set. These short legs were set on good solid timbers forming the cribs. MAC.

River Herbert West, N. S.

Mine Doors and Safety

Cause of many accidents—Recommendations by the Safety Committee—Standard form of door adopted proves satisfactory—Advantage gained in its use.

SPEAKING of mine accidents to which so many writers have referred in recent letters in *Coal Age*, I am reminded of the action taken by the Safety Committee in one of our mines where a water bailer was killed a short time ago by coming in contact with the top of a door frame. His head was caught between the frame and the top of the car. Previously, in the same mine, a brakeman had been seriously hurt when squeezed between a car and the side of a door frame.

As the result of these two accidents, the Safety Committee took it upon themselves to look carefully into the matter of mine doors, with a view to recommending the adoption of some type of door that would insure greater safety to drivers and to men walking the road when going to and from their work. It was agreed that the usual form of mine door was a source of many accidents that a little study of the situation might avoid.

NEW TYPE OF MINE DOOR INSTALLED

Later, on the recommendation of the committee, we have installed, in our advance work, three doors composed of wood and galvanized tin. By this form of construction, the door is made very light as compared with the common type of door built only of wood. For that reason, the door can be made wider as its weight does not pull the frame out of alignment.

There are two features regarding the form of door adopted that are worthy of mention. First, the width of the door opening is made sufficient to give a good safe clearance between the side of the car and the door frame. Second, the usual 6 x 6-in. lentil of the door frame is replaced by a 2 x 6-in. plank, laid flatways, which gives 4 in. more headroom than before.

In addition to this type of door, the Safety Committee recommended the installation of automatic doors throughout the mine and the replacing of all main doors by overcasts. The latter had already been done in all of our larger mines and the same practice will eventually be followed in this mine.

While the adoption of the new type of door was undertaken as an experiment, the result has proved so satisfactory that it has since been decided to standardize this form of mine door, which will be erected henceforth in all advance work. Everything considered, it has been generally agreed that the new type of door insures greater safety in the operation of the mine.

The advantages gained by the adoption of this door as a standard are briefly the following: No matched or grooved lumber is needed in the construction, and the galvanized "Armco" tin does not rust. There is required a much lighter frame, which permits increased clearance each side of the track and more headroom.

Pikeville, Ky. GEORGE EDWARDS.

Circulation in Safety Lamps

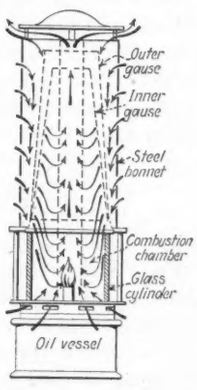
Eloin principle exaggerated—Relates to main air supply entering lamp below flame—Experiments prove that some air enters lamp through gauze chimney.

THE inquiry of Francis Devlin, *Coal Age*, Feb. 8, p. 260, regarding the question of the entry of gas-charged air at the top of the chimney of a safety lamp and descending to the flame, has a direct bearing on the explanation I made, a short time ago, of the cause for the elongation of the flame of a safety lamp in a firedamp mixture.

Some writers have since taken exception to my ideas as then set forth. However, I believe it is wrong to understand that the meaning of the Eloin principle of ascensional circulation within a safety lamp is that no air enters the lamp, except what is admitted through the ports of entry below the flame. My understanding is that the principle of ascensional circulation applies only to the main air supply.

WHAT THE ELOIN PRINCIPLE ACCOMPLISHES

It seems to me that the Eloin principle is much exaggerated. For example, if the lower ports of entry, in the Wolf, the Koehler or other similar lamp, are sealed the lamp becomes at once one of the Clanny type, the air entering the lamp above the glass and descending to the flame.



CIRCULATION IN SAFETY LAMP

The only purpose of providing for the entrance of air at points below the flame is that, by so doing, there is less conflict of the ascending and descending currents, which lessens the tendency of the lamp to smoke and improves the illumination. My belief is that, in every lamp of this type, there is a primary ascending and a secondary descending circulation that partakes, more or less, of the character I have attempted to illustrate in the accompanying figure.

Let me urge any one who may be skeptical of this condition to place a Wolf or Koehler lamp where its chimney will be surrounded by an atmosphere of smoke, while fresh air is permitted to enter the ports of entry below the flame. Removing the bonnet from the lamp will give a better opportunity to observe the result, which will be found quite similar to what I have shown in the figure.

The smoke will enter through the gauze chimney of the lamp and be observed to descend to the flame in the combustion chamber, the current descending in close contact with the cooler surface of the glass, while the ascending current occupies the center of the chimney forming a column above the flame, as indicated by the dotted lines in the figure. It will be observed that this central column has a greater velocity, which is suggestive of a greater degree of heat.

From this center column, extending all the way from the flame to the top of the chimney, the temperature decreases outward toward the wire gauze forming the chimney. This decrease in heat results from radiation and absorption. The annular space between the two gauzes, expanding gradually from the bottom to the top, tends to accentuate the keeping of the gauzes cool. Naturally, the outer gauze is the cooler of the two.

In conformity with the principle of all fluids that movement is always toward a point of lesser pressure, it appears logical to infer that there will be such a movement, however slight, through the cooler part of the chimney to the zone of least resistance surrounding the flame. It is my belief that this movement will be intensified when the lamp flame is lowered to a height suitable for the detection of a flame cap, in testing for gas.

DETECTING THIN LAYER OF GAS AT ROOF

Allow me to suggest that this is the principle involved in the hollow standards of the Ashworth-Hepplewhite-Gray lamp, which is designed to conduct a thin stratum of air, lying at the roof, downward to the flame of the lamp. In my opinion, the annular space between the double gauzes of these lamps serves much the same purpose and provides for the entry of air at or near the top of the lamp.

Undoubtedly, there are conditions under which gas escapes from the roof in such small quantities that its presence cannot be detected by either of the lamps named. However, the fault will generally be found to be owing to the rapid diffusion of the gas, thereby producing too low a percentage of gas to permit of its detection in the lamp.

My conclusion is, therefore, in support of the claim of Mr. Devlin, that under such conditions the gas enters the top of the lamp in sufficient quantities to be detected on the lamp flame, assuming the lamp is constructed on the Eloin principle. I. C. PARFITT.

Washington, D. C.

Foremen, Awake!

Need for special thought in the prevention of accidents in mines—General attitude of foremen toward dangerous practices of miners.

ACCIDENTS occur in so many ways, in the mines, that it requires the giving of special thought and attention to means for their prevention. Observation of conditions, in visiting different mines, leads one to wonder if the general mine foreman is thoroughly awake to his responsibilities, in respect to many dangerous practices that are permitted to go on with little more than a smart reprimand.

The district mine inspector is probably better able to judge fairly, in this respect, because the duties of his office require him to visit a large number of mines, where he is continually afforded opportunities for observing unsafe conditions and practices. Also, as inspector, he must investigate the more serious and fatal injuries of workmen hurt in the mines, and determine

the cause and fix the blame for all accidents occurring in his district.

When an inspector visits a mine, he has no other thought than that of safety in the operations going on about him. His mind is not taken up, or his thought absorbed, in devising means for the more economical extraction of the coal. His whole attention is riveted on the one idea of making the mine safe for work.

It is quite different with the average foreman, who is in charge of the mine and whose thoughts are necessarily divided among the many duties that rest on his shoulders, in reference to maintaining a satisfactory output of coal and keeping down the cost-sheet, which he knows is closely scrutinized by the superintendent and manager. However, the capable foreman can always train himself to meet the responsibilities that rest on him and still have due regard for the practice of safety among his men.

The best proof that the ordinary foreman fully appreciates the true value of safety is shown by his attitude toward workmen who continually follow dangerous practices, day after day. When the attention of the average foreman is called to the matter he justifies himself by saying, "I have told those fellows that they would get theirs one of these days if they didn't change their ways."

It is most remarkable that this type of foreman, however, would not allow a workman to meddle with a machine that he was likely to injure in a way that would cost the company a few hundred dollars or more. At the same time, he will permit a workman to follow a dangerous practice that he knows will, sooner or later, cost the man his life and perhaps obligate the company several thousand dollars in compensation.

Considerations such as these lead me to exclaim, "Wake up, mine foremen!" The wide-awake foreman or assistant foreman will, in the course of a year, find many opportunities to save men from painful injuries or possible death. To do this, however, he must see that every man is following safe practices in performing his work. Only so, can he be a real foreman.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Working Coal Seam With Heavy Slate Parting

Lower Bench Worked Out First—Slate Parting Dropped a Short Distance Back From the Face —Upper Coal Taken Out When Retreating

I AM anxious to obtain suggestions as to the cheapest and safest manner to work a double seam of coal, with a view to extracting all of the coal at the least expense for deadwork.

In our mine, the bottom coal has a thickness of 52 in. This is overlaid with 30 in. of slate parting, which we term "middleman." The upper seam overlying the middleman is also 30 in., and is a good quality of coal. Overlying the upper seam is a sandrock, which makes a good strong roof.

While different ways have been proposed for working out these two seams with least expense for handling the refuse, I am confident that we can learn much from the experiences of *Coal Age* and its practical readers. It should be stated that the slate parting is of a nature that it cannot be held up for any length of time.

Staub, Ky. SUPERINTENDENT.

In this case, there is 4 ft. 4 in. of coal in the lower seam and 2 ft. 6 in. in the upper seam, making 6 ft. 10 in. of coal in all. The thirty inches of slate separating these two seams of coal is a large amount of refuse to handle, which makes it important to select some method that will avoid that necessity.

It is stated that this slate cannot be held up for any length of time. Therefore, taking everything into consideration, it would seem that the safest and most economical method of working to adopt would be to take out the lower coal first by driving the entries in that seam in advance of the work above.

As these entries are advanced, the slate must be well posted for a distance of three or four yards back from the face. A little later, these temporary timbers are knocked out and the slate allowed to fall, after which it is gobbed on one side of the road, forming a solid wall on the side opposite to that on which the rooms are turned.

It is assumed that the coal in the upper seam makes a good roof in the extraction of the lower seam or in the first working, both in the entries and the rooms. This 30 in. of coal forming the upper seam is taken out, later, on the retreating plan, or in the second working when drawing back the pillars.

This proposed plan has, of course, only been described in a general way and must be modified to suit conditions in the floor, which have not been stated in the inquiry. Much will depend, also, on the depth of cover and thickness of the sandstone forming the roof in the upper seam. The necessary modifications must be worked out in accordance with these and other data, not given. We hope for many good suggestions from readers.

Juggling Mine Props

KINDLY explain through the columns of *Coal Age*, the meaning of the term "Juggling Props." Has this term any relation or significance in reference to the building of a jugular manway, in a thick anthracite seam where the inclination is steep? As I recall, such a term is used in that instance. M. J. U.

Freeland, Pa.

The expression "Juggling Mine Props" is a new one to us, we never having heard it used in connection with coal mining. The meaning of the word "Juggling" is to resort to an underhanded trick. It is an entirely different word from the word "Jugular," as used in reference to a manway of triangular shape constructed in an anthracite chute, on a steep inclination. A jugular manway is formed by leaning long props against the rib of the chute so as to form a narrow manway by which the miners can enter or leave the chute. The primary meaning of this term has reference to a throat passage, which the jugular manway in a measure represents. The two terms have a very different significance and bear no relation to each other.

Examination Questions Answered

Alabama Foremen's Examination, Birmingham, Jan. 22, 1923

(Selected Second Class Questions)

QUESTION—*What qualifications are necessary to make a successful mine foreman other than those required by the law?*

ANSWER—Besides being of the required age, a citizen of the United States, of moral character, temperate habits and having the necessary experience in mining, the successful foreman must be a good judge of human nature and able to discern the qualities and capabilities of men. In all his dealings he must be just and firm, showing no favoritism, but giving every man a square deal and making no promises that he may not be able to keep. He must be industrious and painstaking in his habits, setting an example for his men to follow and never asking them to do what he is unwilling to do himself.

QUESTION—*(a) What is a water gage and what is it used for? (b) A water gage shows a reading of 3 in.; what is the ventilating pressure per square foot? (c) What is the total ventilating pressure in an airway 8 x 10 ft., in section?*

ANSWER—*(a)* A water gage consists of a bent glass tube having the form of a letter U. The end of one arm of the tube is bent at right angles to permit of its being inserted through a hole in a partition or door separating the intake from the return airway. When thus placed in position on a partition or door between the intake and return airways, in a mine, one arm of the tube is subjected to the greater intake pressure, while the other arm is open to the lesser return pressure. As a result, the water is depressed in the former and rises an equal amount in the latter arm. The difference in water level is a measure of the difference in pressure between the two points, or the pressure required to pass the air from the intake to the return where the measurement is taken.

(b) Each inch of water-gage reading corresponds to a pressure of 5.2 lb. per sq.ft. A 3-in. reading of the gage indicates a pressure of $3 \times 5.2 = 15.6$ lb. per sq.ft.

(c) The sectional area of an 8 x 10 ft. airway is $8 \times 10 = 80$ sq.ft. and a 3-in. water-gage reading for that airway indicates a total ventilating pressure of $80 \times 15.6 = 1{,}248$ lb.

QUESTION—*How can you tell whether or not any obstruction is in an airway or air-course that you have not passed through?*

ANSWER—Any obstruction to the passage of air in an airway will cause a corresponding increase in the pressure or water gage producing the circulation, assuming the ventilating fan is running continuously at a constant speed. Therefore, any observed increase in the reading of the water gage, while the fan is running at its usual speed, would indicate the presence of some obstruction to the passage of air in the airway and the cause should be sought and removed.

QUESTION—*What materials are best for tamping shots and why?*

ANSWER—Clay, sand and dirt taken from the mine roads form the best materials for tamping shots. Such material being incombustible, cannot add to the volume or intensity of the flame produced by the explosion of the charge, and there is less danger of flame being projected from the mouth of the hole when the shot is fired.

QUESTION—*What is the rubbing surface in an airway, 4 ft. high, 9 ft. wide and 1,000 ft. long?*

ANSWER—The perimeter of this airway is $2\ (4 + 9) = 26$ ft. Then, the length of the airway being 1,000 ft., the rubbing surface is $1{,}000 \times 26 = 26{,}000$ sq.ft.

QUESTION—*Under what conditions would you consider the use of mining machines not advisable?*

ANSWER—The use of mining machines is not recommended where the floor of the seam is quite irregular, which may cause an excessive loss of coal in the mining; or when the seam contains boulders or nodules of pyrites that would interfere seriously with the mining of the coal. It may often prove desirable to mine a soft friable coal with picks, rather than to employ machines for that purpose. This can only be determined by experience in the seam in question. Machine mining is not advisable and may be wholly impracticable on certain steep pitches, owing to the difficulty of keeping the machine up to its work.

QUESTION—*What conditions call for the use of puncher machines for mining?*

ANSWER—The use of puncher machines is often found an advantage where boulders or nodules of pyrites abound in the strata where the mining is done. In the use of the puncher, it is possible to direct the fit so as to avoid such obstructions and cut around them so that they can be removed without difficulty. This is not possible in the use of a chain machine.

QUESTION—*What conditions would make the use of chain machines most desirable?*

ANSWER—Chain cutting machines are best adapted to the mining of coal in a generally level seam that is free from boulders and other obstructions that impede the mining.

QUESTION—*Do puncher or chain machines produce the most dust in the mining of coal?*

ANSWER—Puncher machines will produce a larger quantity of cuttings, owing to the greater height of the mining at the face of the coal. On the other hand, the cuttings produced by the puncher are coarse and there is less fine dust than what is produced in the use of chain cutters.

QUESTION—*What dangers arise from blasting coal out of the solid?*

ANSWER—Where solid shooting is practiced, there is a tendency on the part of the miners to employ excessive charges of powder. The charge is often laid too deep with the result that the shot blows its tamping. Solid shooting requires both experience and skill in the placing of shots to avoid danger.

QUESTION—*What dangers arise from lack of judgment in placing shots?*

ANSWER—When the miner lacks judgment and experience he is prone to locate and point his hole in a direction that requires more work than what the charge is capable of doing, and the result is a blownout shot with the production of much heat and flame and a local explosion of dust is very liable to happen, which may or may not be propagated throughout the mines.

Western Kentucky Strike Ends on Owners' Terms; Two-Year Pact Signed

Scale committees of the Operators' Association and District No. 23, United Mine Workers, met May 4 at Madisonville, Ky., and signed a wage contract for a period of two years, the union officials agreeing to accept the operators' contention after an all-day meeting of the district executive board and scale committee of the mine workers. It is understood that the union officials decided to sign a two-year contract provided there was no change in the working conditions.

Five thousand union miners in Christian, Webster and part of Hopkins County, excluding the St. Bernard Mining Co. in the latter county, are involved by the signing of the new wage scale.

The men went on strike March 31. They were ordered out because the union officials favored a one-year contract and the operators stood firm for two years.

Brent Hart, president of the Hart Coal Co., announced that he would not sign the wage agreement unless men he now had in his employ, who had been working since the strike became effective, were taken care of by the miners' union. Mr. Hart is a member of the Operators' Association. Other mines of the Operators' Association are expected to resume work as soon as railroad cars are available.

To Call Governor Small in Herrin Quiz

The Illinois legislative committee which has been investigating the Herrin massacre resumed its sessions in Springfield, Ill., Monday, and if present plans are perfected the committee probably will draft its final report in three weeks. Governor Len Small probably will be summoned to appear before the committee soon and it is probable also that Former Assistant Attorney General Charles W. Middlekauf, who conducted the prosecution of the cases at Marion, also will be called.

When members of the committee returned from a three days' session at Herrin, they expressed the belief that Former Sheriff Thaxton of Williamson County, who was not a willing witness at Herrin, should be brought to Springfield. While it is generally conceded that Thaxton, who is now County Treasurer of Williamson County, will not reveal information to the committee, it is pointed out that if he commits perjury in this county the case could be taken before the grand jury for investigation. If indictments were returned he would be placed on trial in Springfield, not in "bloody" Williamson County.

An effort is being made to locate W. J. Lester, owner of the Williamson County strip mine where the massacre of June occurred. If Lester is located his testimony may be taken at a session of the committee to be held at Chicago.

National Coal Association Intervenes in Petroleum Case Against Mo. Pac.

The National Coal Association has filed a petition with the Interstate Commerce Commission intervening in the case of the Western Petroleum Refiners' Association against the Missouri Pacific R.R. and other carriers. At the same time, the Traffic Bureau of the National Coal Association sent a letter explaining its action and the case to directors, secretaries of local coal associations and members of the Railroad Relations Committee of the national organization. Inclosed was a questionnaire designed to disclose cases in which coal has been displaced by fuel oil.

The complaint of the petroleum association, representing oil producers in the mid-continent field, was filed with the Interstate Commerce Commission more than a year ago. It was amended about four weeks ago.

In the petition complaint is made against alleged discrimination in freight rates against fuel oil and in favor of coal east of the Mississippi River and north of the Ohio. A large number of railroads are named defendants, some of them extending into the South, so that practically the complaint involves all the principal carriers east of the Mississippi. The commission is petitioned either to require a reduction in the oil rates or an increase in coal rates. The general experience has been that in cases where an adjustment in rates has been directed by the Interstate Commerce Commission the railroads, if possible under the order, will make the adjustment by raising the lower rate rather than by lowering the higher one.

The National Coal Association will contend that freight rates on coal are sufficiently high and probably will argue that the competition of the mid-continent oil producers east of the Mississippi is not with coal but with fuel oil from the Eastern seaboard. Facts developed by the questionnaire sent out by the Traffic Bureau as to the extent of displacement of coal by fuel oil are expected to prove valuable to the coal industry in other than this case before the Interstate Commerce Commission.

The increasing use of gasoline is causing an increased volume of the residue, fuel oil, which is seeking a market energetically, it is said.

Union Appeal from McClintic Injunction Heard; Operators Seek Permanent Order

The U. S. Circuit Court of Appeals, sitting at Richmond, during the first week of May heard arguments on the appeal by the United Mine Workers of America from the decision of Judge George W. McClintic, of the U. S. District Court for the Southern District of West Virginia, restraining the collection by the union of money by check-off.

Pending final decision by the Court of Appeals, the decree of the District Court in so far as it affects the collection of the check-off and therefore the agreement between the United Mine Workers and defendant coal companies has been suspended, so that the union is at the present time collecting the check-off money. Following the strike non-union companies obtained the injunction to restrain the companies signatory to a closed-shop agreement with the union from paying over any money collected through the check-off on the ground that the funds so collected would be used to aid in the organization of their mines.

A meeting of about twenty-five operators of the Kanawha field was held last week to consider the steps to be taken in preparing evidence to be submitted to the District Court on May 21 before Judge McClintic. This hearing will cover thirteen restraining orders granted by Judge McClintic during the strike last summer to prevent interference with the operation of non-union mines. The case will consume more than two weeks and will require the testimony of between 200 and 300 witnesses.

The new hearing is on the question of whether the restraining orders shall be made permanent. One injunction will be selected as a test—inasmuch as the various orders are similar in text—and upon the decision will rest the fate of the remaining orders. Companies in the Winding Gulf, New River, Kanawha and Williamson fields are parties to the injunction.

March Tidewater Dumpings Largest of Any Month for a Year

A total of 3,315,000 net tons of soft coal, according to the U. S. Geological Survey, was moved through North Atlantic ports in March, as compared with 2,708,000 tons in February and 3,189,000 tons in January. The aggregate shipments were larger than in any month since March, 1922, when they were greatly stimulated by anticipation of the strike and totaled 3,357,000 tons. The cumulative shipments at the end of the first quarter of 1923 stand at 9,212,000 tons, against 8,307,000 tons in the same period of 1922.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR MARCH 1923
(In Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	138,000	48,000	105,000	1,039,000	5,000	1,335,000
Export	.....	29,000	111,000	232,000	12,000	384,000
Bunker	249,000	38,000	28,000	168,000	6,000	489,000
Inside capes	.....	149,000	145,000	71,000	.....	365,000
Other tonnage	537,000	1,000	1,000	203,000	.....	742,000
	924,000	265,000	390,000	1,713,000	23,000	3,315,000

Seek Aid of Chamber of Commerce for Coal Commission; Lay Coal Shortage to Labor and Railroads

At the group luncheon meeting of the Natural Resources Division of the Chamber of Commerce of the United States, which held its eleventh annual meeting in New York City this week, two resolutions were submitted, one by the National Coal Association calling upon the officers and directors of the chamber and its affiliated bodies to assist the U. S. Coal Commission in its work, and the other offered by the Charleston Chamber of Commerce placing the blame for coal shortage on labor, followed by the failure of transportation lines when work was resumed at the mines.

The convention continued its sessions from May 8 to 11, the meetings being held in various places and addresses being made by many noted speakers, including Herbert Hoover, Secretary of Commerce.

Those who spoke at the session of the Natural Resources Division, held on May 9, and their subjects were: "Some Problems of Coal Distribution," J. D. A. Morrow, president, Morrow Callahan Coal Co., Pittsburgh, Pa.; "Labor and Its Effect on the Cost of Industrial Coal," J. G. Bradley, president, Elk River Coal & Lumber Co., Dundon, W. Va.; "Economic vs. Legislative Solution of the Coal Problem," George H. Cushing, Cushing's Survey and Service, Washington, D. C.

National Coal Association Presents Resolution

The resolution offered by the National Coal Association was as follows:

"Whereas since the beginning of the World War the production and the transportation of coal have stood out among the country's foremost industrial problems; and

"Whereas coal is the most essential factor in the production, manufacture and transportation of all commodities and constitutes the indispensable material basis of modern industrial and economic life; and

"Whereas the problems encountered in the coal industry are not peculiar to it alone but are found to a greater or less extent in all industries throughout the country: Now, therefore be it

"Resolved, That this body here assembled, representative of all the business and industrial life of the nation, authorizes and instructs its officers and directors to assist in every possible way the work of the U. S. Coal Commission in its investigation of the coal industry; and be it further

"Resolved, That all local and national associations and organizations affiliated with this body be urged to assist its officers and the U. S. Coal Commission in its work and to aid in obtaining the widest publicity as to the facts developed by the commission."

Stripped of its preamble the resolution of the Charleston Chamber of Commerce, read:

"Resolved, That, first, the continued operation of the non-union fields should be encouraged, and that their field of operation should be increased to the end that they could save the nation from disasters in the future which have threatened in the past.

"Second, that both the coal shortage and high prices from which the public suffered is a result not of the faults peculiar to the coal business but (a) from the periodic stoppage of production by the power of a labor monopoly; and (b) the inability of the transportation system of the country to respond to the extraordinary demands made upon it as a result of the shortage created by the strikes."

Mr. Cushing said that to remove the causes of popular complaint against the coal industry—intermittency of coal supply and the fluctuation of prices—it is proposed to put coal under federal regulation and that raises the question whether popular safety is most assured under private business or under state domination.

The statement that anthracite prices have alone involved the whole coal industry in danger of federal regulation is erroneous, he said. Anthracite prices are only one of the causes. Public utilities and railways, which have the selling price of their services and the maximum earning capacity of their capital fixed by law, cannot pay competitive prices for coal and remain solvent. The alternatives are to release the householders, public utilities and railways from regulation so that they can protect themselves in the open market for coal or to put coal under regulation on the theory that a producer must be equally bound with his customers. If the latter is done then the business of other people who sell other things to these controlled groups also will have to be regulated in time.

Responsibility attaches only to ownership. The operator owns the mines and is responsible for production. He has been able and eager to produce at least 20 per cent more than is needed. He has discharged his obligation. The merchant owns the facilities for distribution. He has 50 per cent more facilities than are required. He is eager to use them. The merchant has therefore discharged his obligation to society.

The miners control the energy and the skill for the production of coal. They have shirked; they have declared local strikes; and twice they have declared nationwide strikes.

The carriers own the facilities for transportating the coal. They have less facilities than are needed. The carriers, however, are literally operated by the state. For the failure of the carriers, the state is responsible. The state alone is responsible for policing the country. It has failed to prevent the miners from conspiring to limit coal production. The two causes of the coal distress are the failure of the railroads to deliver and of the miners to mine the coal. For both of these the state must accept responsibility.

Reforms Proposed for Coal Industry

Mr. Cushing said it is proposed to reform the coal industry by stabilization, community storage, consolidations by districts, and nationalization of the coal mines, all of which will tend automatically and unavoidably to increase the price of coal. His remedies or suggestions were:

(1) The inability of the carriers to transport the needed coal should be removed by lifting from the carriers the cause of their incapacity—too much regulation.

(2) The coal operators should so stagger the expiration dates of wage contracts that nationwide strikes are thereby made impossible. If in violation of contracts a nationwide strike is called depriving thereby the people of fuel, the statutes governing conspiracy should be invoked.

(3) A part of the coal field should be kept perpetually free of union domination to serve as a buffer district between the labor unions and the nation's fuel supply.

(4) The railways should be relieved of all necessity to serve any coal mines until after nine month's notice is given that such service is required.

(5) Wage contracts between miners and operators should be cancelled if the workers refuse to employ labor-saving and cost-cutting machinery.

"If the effect of these recommendations," said Mr. Cushing, "should be to abridge the activities of the Department of Labor; abolish the bureau of mediation and conciliation; and prevent in future the appointment of commissions to meddle with wage settlement, I should find in those occurrences no occasion to modify these suggestions."

Herbert Hoover, Secretary of Commerce, discussed the economic measures needed for "holding on to prosperity" in an address on Tuesday night. Dealing with the present situation, Secretary Hoover praised caution, stressed the need for confidence and courage as well, and marked emphatically the difference between caution and timidity.

The broader and deeper essentials involved in the planning of commerce and industry to keep the nation permanently prosperous constituted the major theme of the address.

He cited the increase in efficiency of production of from 10 to 15 per cent per capita since the period immediately preceding the war as one important phase of the necessity for new standards of business thought. A selection of industries furnishing commodities raising the plane of the

average citizen's comfort and convenience of life in the past decade shows a growth of 60 per cent.

Speaking on coal and transportation he said, "One of the great wastes in our economic machine is the shortage of transportation. It is the most profound and far-reaching deterrent upon our growth. It imposes great costs upon production. I need not point out to you that the periodic car shortage in its real meaning of insufficient tracks and terminals, as well as rolling stock, imposes intermittent stoppages of our industries and intermittent strictures in the law of supply and demand, influences price levels and creates local famines and gluts.

"It imposes burdens upon us which I believe every year create commercial losses equal to the entire capital cost of bringing the transportation system up to national need. It would be easy to demonstrate that in the additional price of coal due to insufficient transportation during the past year we have paid more than the equivalent of a 50 per cent increase in freight rate on coal.

"The causes of shortage are not far to seek. While the war contributed much delay and demoralization, the continued strangulation of railroad finances alone, before enactment of the present transportation law, could have brought us only one result. Nor is this a criticism of the railways, for they have grown in detailed working efficiency with the rest of the country. In a decade they have increased the movement of goods by 15 per cent with an increase of 3 per cent in personnel. Moreover the managers are showing great faith and courage in the undertaking of a large program of expansion. . . .

"There is a matter of immediate importance in which the commercial public can be of the utmost assistance in transportation and at once. Pending a large amount of betterments the railways are overtaxed to handle the vast volume of commodities we are producing and consuming even to-day. The continuance of our prosperity depends upon their handling the full load. With the continuation of business volume their burden will be even greater next fall than ever before. Therefore, a great service can be given if every local Chamber will definitely organize to cooperate with every local railway official toward this end. Particularly can the whole community assist if it stocks its coal between now and September so as to relieve the fall and winter traffic.

"There is another direction in which we have great opportunity to improve national economy. That is in the better functioning of our coal industry. If we can reduce the intermittence of operation of the mines and secure their more even seasonal production we shall by eliminating one-third of the capital and labor involved, accomplish three great things of industrial progress—give greater stability to the industry, give better conditions of labor and reduced costs to the consumer."

Operators Submit Brief on Outlaw Strikes In Anthracite Fields

On May 1 the anthracite operators submitted to the U. S. Coal Commission a brief on Outlaw Strikes in the Anthracite Fields, summarizing suspensions called in violation of agreement to submit grievances to established agencies for conciliation and arbitration.

For more than twenty years the anthracite industry has been working under union agreements with established machinery for conciliation and arbitration, states the brief. That machinery now provides for committees at each mine to adjust matters which are not settled with the foreman; a Board of Conciliation, composed of three operators and the presidents of the three district unions to adjust matters not settled in the colliery; and an umpire, who sits as supreme arbiter in cases where the board cannot agree. In spite of the fact that this machinery, based on agreement between the parties, is in full swing, and operates as a fair safeguard against unfair treatment of the miners, outlaw strikes have grown to enormous proportions.

"The total magnitude of these outlaw strikes, which are violations of agreement and exclusive of general strikes, paints a picture of chaotic conditions which it is our indisputable duty to present.

"In 1919 35,139 different men engaged in outlaw strikes and 235,553 man-days were lost. The lost output was about 377,000 tons, of the value of over $2,250,000.

"In 1920 96,840 different men were idle on outlaw strikes and the man-days lost were 1,815,000. The lost output was about 3,356,000 tons, of the value of over $20,000,000.

"In 1921 52,117 different men engaged in outlaw strikes and the total man-days lost were 823,279. The tonnage lost was 1,372,000, of the value of over $8,600,000.

"One company alone endured about 70 outlaw strikes in one year and nine months, and during two months in 1920 suffered a tonnage loss on such account of over 850,000 of the value of over $5,000,000. When the Wilson Anthracite Coal Commission rendered its award in August, 1920, giving the men an increase of 17 per cent, over half of the industry was tied up about two weeks in a so-called 'vacation strike' as a protest against the award.

"As one views this accumulation of economic waste in an organized industry operating under union agreements with facilities for conciliation and arbitration and the preposterous and frivolous character of so many of these outlaw strikes, there is reason to believe that there is no other industry where this evil has reached such extremes and where union discipline and responsibility has so completely collapsed.

"The difficulty does not lie with the machinery for adjustment which has been repeatedly readopted by the parties but in the irresponsible power of the United Mine Workers which, as in the case of all human institutions, inevitably leads to arbitrary action. Uncurbed human power seldom stops at the portals of justice. The remedy does not lie in discarding or emasculating this organization but in devising some adequate means whereby responsibility, and submission to the machinery for conciliation and arbitration, can be maintained. In order to approach the remedy, which will be the subject of one of our late papers, it is first necessary to review the work of the Board of Conciliation and the general subject of outlaw strikes."

After giving details of button strikes, holidays and other forms of outlaw strikes Walter Gordon Merritt, counsel for the anthracite operators, concludes:

"The underlying cause of this chaotic condition is a moral attitude well exemplified by the boastful and triumphant statement of one of the district presidents at the close of the 1922 strike, when he said:

" 'From time to time as the fight went on, the operators changed their arbitration proposals and dressed them up in many disguises, but the mine workers refused to become parties to any arbitration or approach to arbitration. We refused arbitration from the President of the United States notwithstanding that all the pressure of the government was back of that proposal.'

"Countless victories over the operators in minor matters and continued repression of criticism and insubordination on the part of the rank and file of union membership, have produced an autocratic machine with little or no regard for the rights of others. Numerous demands won through infliction of great financial and economic losses for which the unions have never been made answerable, with a resulting disregard of legal and moral responsibility, finally reached their consummation in this boasted rejection of the proposals of the Chief Executive of the nation, who desired only to protect the public from privations.

"No moral or legal restraint having been operative, these organizations, placed in the strong strategic position because of steady employment of the miners at high wages, have become imbued with a sense of power which heedlessly violates contracts and exults over resistance to the proposals of the chosen representative of our people. To reverse this condition, to encourage democratic administration of union affairs, and to impose a sense of responsibility, some system must be devised which will justly bring home to these organizations the burden of their wrongdoing. The operators have in mind a definite proposal to meet this problem and will submit it to the commission as soon as their papers diagnosing the situation have been completed and filed."

Commerce Commission Begins Hearing on Complaint of Dock Operators for Adjustment of Illinois Rates

Will coal rates into the Northwest be changed this summer? The question arose during the great rate battle in the Interstate Commerce Commission hearings in Minneapolis and St. Paul, Minn., which started May 2 and were scheduled to end May 8, and in which the Northwest Dock Operators' Association hoped to prove that Illinois rail rates into the Northwest were unreasonably low. No official statement from the commission was made on the point, but the impression became firmly fixed in many minds that a decision will be made within two months. In the hearings the dock interests asserted that present rates debar dock coal from much territory it had learned to regard as its natural market. Illinois replied that what the docks really want is a fabric of rates that will continue the dock monopoly on Northwest trade.

Five complaints were on the list for hearing. The first was I. C. C. Docket 14476, a complaint of the Northwest Dock Operators' Association attacking past adjustments of rates from Illinois, more particularly southern Illinois, to points in Iowa, Minnesota and North and South Dakota as being unreasonable. The second case was I. C. C. Docket 14622, a complaint of the Board of Railroad Commissioners of South Dakota seeking rates on fine coal to South Dakota destinations. The third was I. C. C. Docket 14533, a complaint of the Traffic Bureau of the Sioux City (Ia.) Chamber of Commerce seeking changes in rates from Duluth and from Illinois to that city. The fourth was I. C. C. Docket 14477, in which the C. Reiss Coal Co. asks that the Holmes and Hallowell scale be applied to coal from Illinois to Wisconsin. The last was I.C.C. Docket 14142, a complaint of the Illinois Coal Traffic Bureau on inequalities in rates to local stations in Wisconsin from Lake Michigan docks and from the northern Illinois field.

It was evident on the first day that the commission expects to make as quick a job of the case as is consistent with careful consideration of evidence. C. I. Kephart, examiner for the commission, at the outset told the assembled lawyers, traffic men and lay representatives that the briefs and oral argument must all be in and the hearing finished by May 8, and that on June 8 final communications must be in the commission's hands.

On the first day the dock case presentation was completed—after some seesawing. Wayne Ellis, secretary of the Northwest Dock Operators' Association, under questioning by Attorney Frank Lyon, for the association, declared early in his testimony that the interests he represented did not care whether the commission raised rail rates on coal from Illinois or lowered rail and lake rates so long as an equalization to Northwest points was obtained. What the dock men want, he said, is an extension of the Holmes and Hallowell scale. This brought a stiff rejoinder from F. S. Keiser, traffic manager for the Duluth Chamber of Commerce, who protested that the dock men ought to have the interests of the consumers of the Northwest closer to heart than that. Lower coal rates is what the people of the Northwest want and need, he insisted. After a recess the Ellis statement was withdrawn and the dock association was recorded as not favoring a change that would add to the ultimate cost of coal in the Northwest.

Most of the testimony for the dock association in the first complaint—I. C. C. Docket 14476—was contained in a thick pamphlet prepared for the commission and filed as an exhibit. This and the bulk of other evidence introduced by the complainant dock interests made an exhaustive argument to show that present rail rates from Midwestern coal fields to points in Iowa, Minnesota and North and South Dakota are unreasonably low as compared with rates from Duluth and West Superior, that this enables rail competitors practically to deprive the upper Lake docks of their natural and normal business, thus endangering an investment of $25,000,000 or more in dock facilities; that the long haul of empty cars from the Northwest back to Illinois mines is a handicap to transportation and ought to be discouraged, and that the storage service the docks are able to perform for the Northwest ought to be encouraged. The case has been presented in most of the principal details in the press during the past month or so.

In 1917 the Interstate Commerce Commission increased freight rates 15c. per ton on the rail hauls of rail-lake-rail coal. Thus the total addition was 30c. on lake coal whereas the same advance added but 15c. to the Illinois rate. In further orders of the commission since then total advances on coal going into the Northwest by rail and lake have been $1.74, and on Illinois only $1.17. This difference of 57c. to the advantage of the Illinois shippers is the cause of the present complaint of the dock interests.

The dock complaint cites the steady decrease in coal handled by the docks and the steady increase of shipments of Illinois coal into the Northwest as proof that rates are so badly out of line in favor of Illinois that fair competition is disturbed. In 1913 lake shipments to Duluth totaled 11,000,000 tons of Eastern coal and the increase by years had been averaging 10 per cent. But in 1921 the total was only 7,500,000 tons, of which 3,750,000 are said to have been carried over after the winter season. In 1922 the total was about 6,500,000 tons and dock men prophesied the 1923 total would be less. The Illinois answer to this was that the drop in dock business was partly due to the decrease in total production of the country during the past two years and partly to the fact that the pool system of shipping Eastern coal to the Northwest has lowered the quality of dock coal.

Says Dock Interests Seek Monopoly

Fred H. Harwood, traffic manager for the Illinois Coal Traffic Bureau, in presenting the arguments for the Illinois and Indiana operators, declared that the petition for an adjustment of rates clearly shows that the dock interests are seeking to reduce the amount of coal coming into the Northwest and thereby set up a monopoly. He presented testimony to prove his claims and showed that rates from Illinois and Indiana are even too high now to give the Middle Western producers the opportunity for competition in the Northwest they ought to have.

"The members of the Illinois Coal Traffic Bureau are favorable to and consider that rates on bituminous coal should be made and maintained on the group basis of adjustment, both as to origin and destination, except there are situations where this might be modified to fit conditions as to short-haul points, such situations, however, to take into account all conditions," he said.

Mr. Harwood said that rates on coal from Illinois and Indiana to the Northwest have already been advanced during the last 10 years, while rates on Eastern coal to the docks have remained unchanged. This, he declared, was a discrimination and hurt Illinois and Indiana competition in the North.

The rail defendants expressed surprise that the dock case was put in so briefly—with such lack of detail—and they suggested an elaborate hearing was a waste of time. The dock men's case was made up largely of records and was based upon the theory of rate making adopted by the commission in its own decisions on cement rates. They said the records themselves furnished case enough to convince anybody that rail charges from the docks inland are discriminatory.

J. W. Goodman, for the Commercial Club of Grand Forks, N. D., said dock rates to that city were too high as compared with Montana and Wyoming rates. This started an argument as to whether the dock interests want to reopen Western rates which have just been established after exhaustive study. J. L. Browne, of Sioux City, Iowa, said that rates from the docks to Sioux City are too high and that Illinois rates to the Northwest are so inequitable that variations of 300 miles make no difference in charges. He favored distance rates. Belleville (Ill.) operators inter-

vened in the Sioux City case, asking that the Standard mining district get the same rates to Sioux City as does the Springfield (Ill.) district, though it is 80 miles farther away. Commissioner Kelley, of the South Dakota Railway Board, said that a general revision downward on rates from all points into that state is needed.

On Monday morning the hearing was transferred from the Federal Courts Building to the Minnesota Senate Chamber, in St. Paul. Several intervenors with local interests were heard, urging generally that no increase be made. F. H. Harwood was heard in rebuttal. The Western railroads cut some of the ground from under the dock men's feet Monday afternoon when B. B. Beidelman, of the Great Northern, the carriers' spokesman, opposed any reduction of the Holmes and Hallowell schedule for coal going off the docks. He denied the dock operators' statement that there is a balanced movement of box cars loaded west with coal and east with grain, saying the roads have to haul great numbers of empties from the Twin Cities and elsewhere back to the dock. Public-utility men disclaimed any preference for either dock or Illinois coal rate changes.

Rocky Mountain Fuel Co. Explosion Takes Toll of Ten Lives

An explosion Saturday afternoon, May 5, in the Southwestern Mine of the Rocky Mountain Fuel Co., at Aguilar, Colo., caused the death of ten miners entombed in the workings. The ten bodies were removed from the scene of the disaster at 10 o'clock Sunday morning after continuous work by rescue crews composing eighty men from adjoining mines under the direction of rescue forces from the Bureau of Mines.

Investigation disclosed that the electric current that operates the fan stopped and was off for fifteen or twenty minutes. It was during this interval or when current was restored that the explosion occurred. Three miners managed to escape death by only a narrow margin. If the disaster had not occurred on an idle day sixty miners ordinarily on duty might have been trapped.

Kansas Will Try to Open Its Mines

Out in Kansas they are trying to remedy the coal market and the curse of mine idleness by some kind of official and public action. Just what the method will be may be determined May 10 at a general conference of coal mine operators, mine-union officials, wholesale and retail coal men and railroaders in Topeka. Governor Jonathan Davis called the conference after Ed. T. Hackney, the Governor's special representative, filed a report following his recent study of mine idleness. The investigation was made after the miners had begged the Governor to do something to save their jobs but not to turn the matter over to the hated Kansas Court of Industrial Relations.

In his report Mr. Hackney states that Kansas miners averaged only $1,000 total earnings in 1922 and face a period of suffering if they cannot work this summer. He says railroads are ready right now to do a good job of coal moving; that bins, both domestic and industrial, are empty and that retailers and wholesalers have nothing to do. If these bins are not filled during the summer, he prophesies there will be a panic for coal next autumn, which "will bring joy to the profiteer."

"The miners," says the report, "at this season of the year, when they are not rushed, should be able to produce coal with less slack, that would be suitable for domestic consumption.

"The operators, who say they are taking heavy loss on overhead on idle mines, should reduce the profit on this storage coal to a minimum. The railroad coal-holding companies, to save their industry, should reduce the royalty and rental on storage coal to the minimum. The railroads should utilize their equipment and get tonnage at this slack time, and save the coal industry, with its ever valuable freight revenue tonnage. This would avoid overtaxing their equipment while they are moving the crops and livestock to market."

Union "Soaks" Miners to Limit Output, Says Brief of Anthracite Operators

In spite of the formal agreement between anthracite operators and miners that there shall be no limitation of output, a brief filed May 7 with the U. S. Coal Commission by the anthracite operators asserts that "there is concerted effort on the part of the unions to curtail production by the passage of resolutions fining miners for producing more cars than a specified maximum."

The statement, signed by Walter Gordon Merritt, counsel for the General Policies Committee of Anthracite Operators, says in part:

"Typical cases serve to illustrate the practice. Before the suspension of 1922 it was customary with one company for a miner to load from eight to twelve cars a day. Following the suspension the union imposed a restriction of four to six cars for the various veins, with the result that thereafter the highest output of any man is six cars. One contract miner desiring to make more money and exceeding the union limit in January, 1923, is informed by the union president that he has been fined $25 for loading an excess of seven cars. Finally the fine is reduced in amount and paid, with a warning to the miner that if he again loads more than six cars a day they will 'soak' him.

"Two men are fined in another mine for loading more than two cars of coal a day, and a strike is threatened to enforce collection of the fine. The union president admits the existence of a rule to that effect and declares that any man violating it will be fined. He further states that the reason for the restriction is that the union does not wish the operators to be able to show a large wage earned by individual miners on certain days, and that the union has as much right to fine men for loading too much coal as the law has to fine men for speeding.

"In another case the union demands that the company collect the fine and a strike is ordered because it refuses. The company is punished for refusing to collect a fine imposed on a man doing what the company believes he ought to do.

"Some unions impose a rigid arbitrary limit for all mines and veins regardless of varying conditions. Another local makes the miner forfeit the price of each excess car. Checkweighmen employed by the union to check car weights sometimes are obliged by the union to keep a check on the number of mine cars produced and to report excessive cars to union headquarters.

"When men are asked by the foreman why they do not load more coal, they reply, 'What is the use if we have to pay a fine for loading an extra car.' They frankly state their desire to do more work, but fear union discipline.

"In one mine a normal day's output for a miner will be four cars, but union restrictions keep the production down to not more than three cars, with the result that the breaker has to be shut down on alternate days for lack of an adequate coal supply. A strike is thereupon called to force the breaker to operate every day although its intermittent operation is due to union restrictions on output.

"The direct losses due to outlaw strikes and the economic waste flowing from inefficiency and limited output represents a substantial addition to the total cost of coal production without benefit to anyone."

Coal Bids Sought for Naval Stations

Bids will be opened at noon on May 23 by the Bureau of Supplies and Accounts of the Navy Department, in Washington, for furnishing and delivering about 382,950 gross tons of bituminous coal for the various naval stations from Boston to Pensacola, Fla., and to the Great Lakes Station, Ill. Deliveries are to extend from July 1, 1923, to June 30, 1924. Among the tonnages called for are the following: Boston Navy Yard, 30,000; Brooklyn Navy Yard, 57,500; Philadelphia Navy Yard, 45,000; Annapolis Naval Academy, 35,100; Washington Navy Yard, 50,000; Naval Powder Factory, Indian Head, Md., 33,000; Hampton Roads Naval Base, 22,000, and Norfolk Navy Yard, 45,000.

Coal Commission Has Courage to Say What Is Needed, But Seeks Support of Conflicting Factions

By Paul Wooton
Washington Correspondent of *Coal Age*

There is handwriting on the wall which says that the American people intend to have a coal supply that is constant and which sells at a decent price. The coal-producing and distributing agencies will be well advised if they take note of the public temper and cease their constant warfare and inclination to charge all the traffic will bear before the people take charge of their industry. These are deductions from statements made by Thomas R. Marshall, of the President's Coal Commission.

"There are two broad principles," said Governor Marshall, "which the American people are not going to give up without making a lot of trouble. One is to work when, where, how and for what one pleases. The other is to combine and bargain collectively on wages and working conditions. Those concerned are being requested prayerfully to furnish the means by which these principles can be kept alive and outbreaks or disturbances stopped or be punished."

Continuing, Governor Marshall said: "One of the things much needed in this situation is for the individual citizen to take care of himself. Unless the general government is going into the coal business and is going to make the President a mine boss, the individual citizen must pay attention to his own business and avoid being skinned by coal or other dealers. If the individual will do his part, it will help to rectify matters. Moreover, is there any doubt as to the power of a municipality to issue licenses to those who retail coal? If I were living in Washington and coal costing $8 at the mine was offered for sale at $15, I would hire a hall and start a community coal yard. I would not curse the President. Anyone has the right to pay $1,000 for a spavined horse. Consumers do not have to pay excessive prices if they have backbone enough to take the necessary initiative.

"We need a revival of patriotic impulse in America. There must be a revival of what is fair and square and decent. The law prescribes certain limits but the gospel sets up others. There is need for a new light which will make plainer the duties owed to the people. As far as he can each should forget his legal rights. All concerned should meet the commission in a spirit of conciliation to bring the coal industry to a substantial and continuing basis, insuring a constant supply at a reasonable price, which will allow a fair return on investment and the payment of American standards of wages.

"The commission has nerve enough to tell Congress what ought to be done, but it prefers to have the warring elements back of the plan that is submitted to Congress so that it will not be involved in legislative controversy. In the meantime there may be another coal shortage, another cessation of work and the people may say 'a plague on both your houses'."

Chairman Hammond said that the commission is very much pleased at the settlement reached in the State of Washington. He said the commission could not take much credit in that connection, but that at least it had introduced the contending interests to each other and may have broken the ice for the preliminary discussions. Mr. Hammond again indicated that public hearings are to be resorted to only when the irreconcilable points have been clearly and positively established.

As a result of the commission's suggestion that efforts be concentrated on concrete suggestions as to how peace may be maintained in the industry, it was stated that such views already are reaching the commission. "It would seem," said Dr. George Otis Smith, "that the commission is to have more help and the newspapers less material. It is evident that all are making a new effort to be constructive."

The anthracite operators are to appear soon before the commission in executive session. The commission also expects an early call from John L. Lewis. The returns on the cost questionnaire are being received at a much more rapid rate than those on earnings. Dr. Smith stated that the commission realizes that the earnings questionnaire placed a heavy load on the operator, but that the returns covering large blocks of production are promised in the near future. All returns are being tabulated as rapidly as they are received.

Miners and Operators of Southwest Want Rates on Coal Lowered Materially

Arguments for a reduction of freight rates on coal from the Kansas field to the Missouri River will be heard by the Interstate Commerce Commission in Kansas City, May 17. The hearing will be in answer to a petition by coal operators of the state, based on the claim that rates on steam coal from Illinois to the Missouri River are discriminatory against the Kansas mines. Two attempts have been made by railroads of the affected district to lower rates, but in both instances the new tariffs were suspended by the Interstate Commerce Commission.

Supporting the operators in their attempt to obtain rate reductions are the miners and business men of Kansas, and the State Public Utilities Commission. It is the first time in many years that operators, miners and the public have been on the same side of the fence in Kansas.

In a request to the Public Utilities Commission to intervene in the hearing, United Mine Workers officials declared that between eight thousand and ten thousand miners in the state are out of work because of lack of market for the product of the mines. The assertions of both the operators and miners concerning conditions in the field are supported by the report of E. T. Hackney, special representative of Governor Davis, who recently investigated conditions.

Discriminatory and unjust rates on coal to the great consuming markets along the Missouri River are protested by the Colorado and New Mexico Coal Operators Association in a complaint filed with the Interstate Commerce Commission April 23, in which a 25-per cent reduction on freight rates is sought to points in Kansas, Nebraska and in South Dakota west of the Missouri River. F. O. Sandstrom is traffic manager for the complainant.

The association declares that business amounting to more than 200,000 tons of coal a year is lost by the operators of Colorado and New Mexico because of excessively high rates. The present rate to most Missouri River markets is $5.26 a ton. The attorneys for the operators hope to show that $4 per ton would be a sufficient charge and would not stifle competition.

Western coal rates were submitted to the Interstate Commerce Commission a year ago when it made an investigation on its own initiative of the rates in Colorado, Wyoming and west to the Pacific coast.

Citing inequalities in rates from various regions, Harry F. Nash said that from Bevier, Mo., to Broken Bow, Neb., 622 miles, the freight rate on lump coal is $4.01 per ton. From Walsenburg, Colo., to Broken Bow, 440 miles, the rate is $5.27, or $1.26 per ton higher with a 182-mile shorter haul. From Herrin, Ill., to Beatrice, Neb., 642 miles, the freight rate is $4.50 per ton. From Walsenburg, Colo., to Beatrice, 578 miles, the rate is $5.27, or 77c. per ton higher for a 64-mile shorter haul.

To Superior, Neb., from Kirby, Wyo., a 760-mile haul, he said the rate on slack coal is $3.96 per ton. From Walsenburg, Colo., to Superior, 572 miles, the rate is $4.27 per ton. The haul is 197 miles less but the rate is 31c. per ton higher.

Production and the Market

Weekly Review

May opens auspiciously for the coal trade, both hard and soft. Independent producers of anthracite have a market for domestic sizes as high as $11 and week after week there is hung up a 2,000,000-ton production record. It is true steam sizes are moving much less readily, but that is to be expected. Bituminous-coal production holds around 10,250,000 net tons per week, and prices, though gradually easing off, are well above those a year ago both before and after the strike began. There is a definite movement on foot to build up storage piles of coal this summer in order that when the fall rush hits the railroads there will be no jam caused by essential coal traffic. This drive for summer buying of coal, energetically fostered by the Department of Commerce, is gaining momentum. Thus, although there has been no visible buying movement such as was expected the first week in May, inquiries are numerous and producers and shippers are hopeful.

Production Exceeds that of Active Years

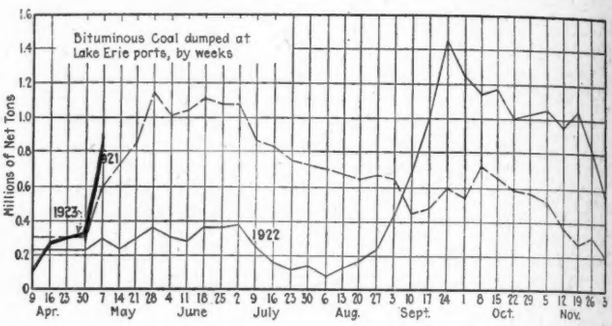
Production of soft coal in the first four months of 1923 was 179,630,000 net tons, about 1 per cent greater than in the corresponding periods of 1917, 1918 and 1920, years of marked business activity, and about 30 per cent more than for the same periods of 1919, 1921 and 1922, years of depression and strikes.

Production of anthracite remains around 2,000,000 tons per week, with 7,850,000 tons as the April output. The output for the first four months of 1923 was 33,718,000 tons, or nearly 55 per cent more than in the corresponding period of 1922.

Nearly all coal with the exception of Standard Illinois and Fourth and Fifth Vein Indiana show small price recessions from last week. *Coal Age* Index of spot prices for bituminous coals was 220 on May 7, as compared with 224 for the previous week, with the average price at $2.66. Lack of business and lower prices caused additional soft-coal mines to close. Midwestern coals are at a low point. There is a lack of active spot demand in central Pennsylvania.

Railroads and utility corporations are the heaviest buyers, taking on good sized tonnages at current prices. Bids received last week by the U. S. Shipping Board for furnishing about 2,500 gross tons of either Pool 9 or 71 coal f.a.s. New York harbor brought tenders ranging from $5.77 to $6.90. A tender of $5.91 was received for furnishing 1,700 tons of similar coal t.i.b. Philadelphia. The New York Custom House bought 400 gross tons of Pool 11 alongside at $4.25, plainly distress coal since not characteristic of the market.

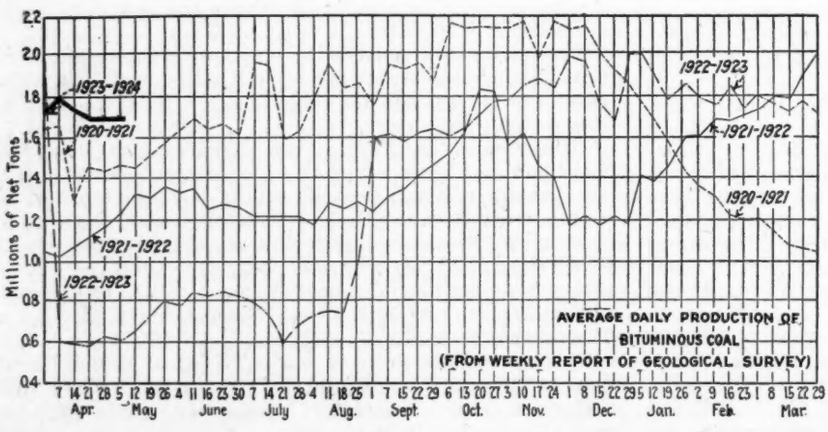
The export market remains quiet, the only feature being a reported inquiry involving about 40,000 tons of



Southern coal. Some chartering of vessels on old business was reported.

During April thirty-five vessels left Baltimore carrying 218,185 tons of cargo coal and thirteen boats carried 66,419 tons of cargo coke. Bunker coal on foreign trade boats was 14,459 tons, making the total coal and coke dumped at Baltimore in April 299,063 tons.

Lake navigation into Duluth opened on May 5 with the arrival of fifteen boats containing bituminous coal. No anthracite was received, although the situation there



Estimates of Production
(Net Tons)

	1922	1923
BITUMINOUS		
April 14	3,656,000	10,401,000
April 21 (*b*)	3,575,000	10,223,000
April 28 (*a*)	4,175,000	10,235,000
Daily average	696,000	1,706,000
Calendar year	144,529,000	179,630,000
Daily av. cal. year	1,438,000	1,783,000
ANTHRACITE		
April 14	6,000	2,067,000
April 21	6,000	2,065,000
April 28	5,000	2,116,000
Calendar year	21,803,000	33,718,000
COKE		
April 21 (*b*)	94,000	437,000
April 28 (*a*)	89,000	424,000
Calendar year	2,305,000	6,419,000

(*a*) Subject to revision. (*b*) Revised from last report.

regarding hard coal is serious. Heavy ice is reported in other sections, notably at the "Soo" and difficulty is expected in getting boats through. Many loaded vessels are waiting at the lower Lake ports for the ice to break before venturing outward.

"The production of soft coal during the last week of April," says the Geological Survey, "was practically the same as in the week preceding. The total output was estimated at 10,235,000 net tons against 10,223,000 tons the week before, and 4,175,000 tons in the corresponding week in 1922. Preliminary reports of cars loaded in the week April 30-May 5 indicate declining production. This was due to the partial observance of the May Day holiday at some mines. Loadings on that day totaled 27,359 cars against an average of about 31,000 on recent Tuesdays."

Dumpings at Hampton Roads for all accounts during the week ended May 3 was 355,271 net tons, as compared with 323,855 net tons the week previous.

Demand for the domestic sizes of anthracite continues undiminished. Producers are heavily booked and some are refusing further orders. There are many buyers from Canada in the mining fields ready to pick up any spot domestic coals that may be available.

Midwest Trade Still Slow

Trading in almost all midwestern coals in Chicago remains at a low point. The May 1 boost in prices of domestic sizes of southern Illinois coal had the expected effect: A few more mines shut down for lack of business. But this further reduction of the fuel supply of the region did not hoist the rock bottom price of screenings. Steam buyers take what is offered at the low quotations and placidly decline everything else. Railroads have begun to buy some lump because those mines which are running must have a place to put sluggish domestic sizes.

Coal equipment from some of the central western lines is trickling eastward into service between Kentucky and the Lakes. There car supply has been improving over the past week with the swell in Lake traffic.

St. Louis Market Is Soft

Down around St. Louis steam demand has shown a slight pick-up. Carload screenings are moving a degree easier though the trade in steam coal in small lots is as dead

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

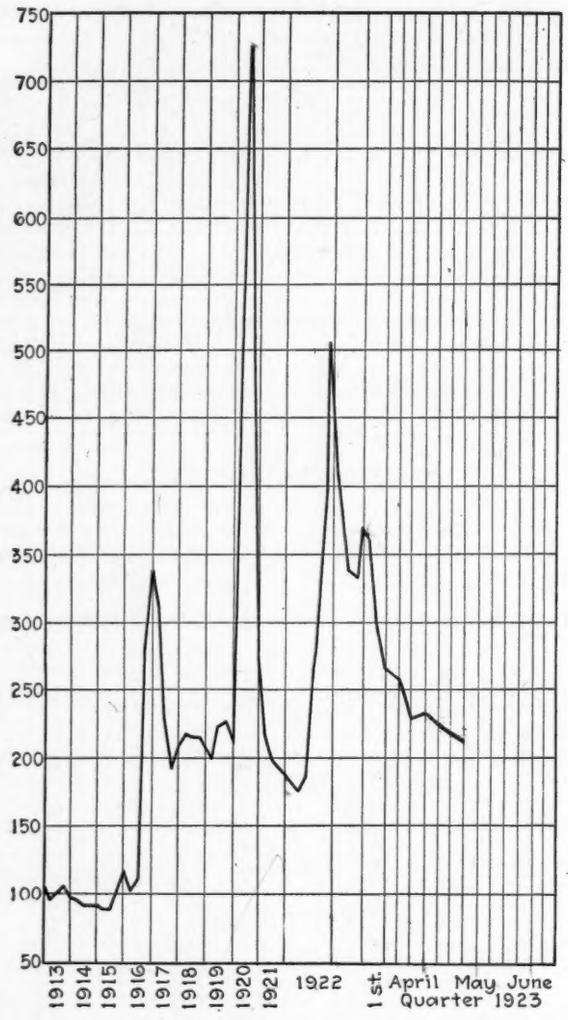
	Market Quoted	May 8 1922	Apr. 23 1923	Apr. 30 1923	May 7 1923†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$2.85	$6.15	$6.10	**$6.00@$6.35**
Smokeless mine run	Columbus	2.40	4.25	4.10	*3.75@ 4.25*
Smokeless screenings	Columbus	2.20	4.10	4.00	*3.50@ 4.00*
Smokeless lump	Chicago	2.90	6.10	6.10	6.00@ 6.25
Smokeless mine run	Chicago	2.25	3.85	3.85	3.75@ 4.00
Smokeless lump	Cincinnati	2.90	6.35	6.00	6.00
Smokeless mine run	Cincinnati	2.60	4.25	3.85	3.75@ 4.00
Smokeless screenings	Cincinnati	2.40	4.00	3.85	3.75@ 4.00
*Smokeless mine run	Boston	5.65	6.25	6.35	6.25@ 6.50
Clearfield mine run	Boston	3.15	2.75	2.60	*2.00@ 3.00*
Cambria mine run	Boston	3.50	3.35	3.35	*2.75@ 3.50*
Somerset mine run	Boston	3.40	3.15	3.00	*2.85@ 3.25*
Pool 1 (Navy Standard)	New York	3.75	3.85	4.00	*3.50@ 4.00*
Pool 1 (Navy Standard)	Philadelphia	3.75	3.95	4.05	*3.85@ 4.25*
Pool 1 (Navy Standard)	Baltimore	3.90	.....	.....	.....
Pool 9 (Super. Low Vol.)	New York	3.50	3.10	3.10	*2.60@ 3.00*
Pool 9 (Super. Low Vol.)	Philadelphia	3.40	3.20	3.10	*2.85@ 3.30*
Pool 9 (Super. Low Vol.)	Baltimore	3.40	2.90	2.90	*2.75@ 2.85*
Pool 10 (H.Gr.Low Vol.)	New York	3.25	2.50	2.60	*2.25@ 2.75*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.20	2.55	2.50	*2.25@ 2.65*
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.25	2.50	2.50	*2.25*
Pool 11 (Low Vol.)	New York	3.00	2.05	2.25	*1.90@ 2.50*
Pool 11 (Low Vol.)	Philadelphia	2.85	.....	2.10	*1.90@ 2.15*
Pool 11 (Low Vol.)	Baltimore	3.20	2.15	2.15	*2.00*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	2.70	1.85	1.80	1.60@ 2.00
Pool 54-64 (Gas and St.)	Philadelphia	2.65	2.20	2.05	*1.75@ 2.00*
Pool 54-64 (Gas and St.)	Baltimore	3.00	1.95	1.95	*1.80*
Pittsburgh sc'd gas	Pittsburgh	.....	3.10	2.85	2.75@ 3.00
Pittsburgh mine run (St.)	Pittsburgh	.....	2.00	2.00	2.00
Pittsburgh slack (Gas)	Pittsburgh	.....	2.10	1.60	**1.75**
Kanawha lump	Columbus	3.15	3.75	3.60	*3.25@ 3.75*
Kanawha mine run	Columbus	2.65	2.25	2.25	2.00@ 2.50
Kanawha screenings	Columbus	2.20	2.40	2.10	*1.90@ 2.20*
W. Va. lump	Cincinnati	2.50	3.85	3.75	*3.00@ 4.00*
W. Va. Gas mine run	Cincinnati	2.90	2.50	2.40	*2.00@ 2.75*
W. Va. Steam mine run	Cincinnati	2.70	2.50	2.40	*2.00@ 2.75*
W. Va. screenings	Cincinnati	2.50	2.25	2.25	*2.00@ 2.25*
Hocking lump	Columbus	3.15	2.85	2.85	2.75@ 3.00
Hocking mine run	Columbus	2.90	2.00	2.00	*1.85@ 2.10*
Hocking screenings	Columbus	2.25	1.70	1.70	*1.50@ 1.75*
Pitts. No. 8 lump	Cleveland	3.25	2.90	2.85	**2.35@ 3.50**
Pitts. No. 8 mine run	Cleveland	$3.00	$2.15	$2.15	$2.10@$2.25
Pitts. No. 8 screenings	Cleveland	3.00	1.95	1.80	*1.75@ 1.85*
Midwest					
Franklin, Ill. lump	Chicago	3.45	3.65	3.65	**3.50@ 4.10**
Franklin, Ill. mine run	Chicago	3.00	3.10	3.10	3.00@ 3.25
Franklin, Ill. screenings	Chicago	3.00	1.95	1.85	1.75@ 2.00
Central, Ill. lump	Chicago	2.75	2.70	2.70	*2.25@ 2.35*
Central, Ill. mine run	Chicago	2.75	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	2.00	1.55	1.55	1.50@ 1.65
Ind. 4th Vein lump	Chicago	3.15	3.35	3.35	3.25@ 3.50
Ind. 4th Vein mine run	Chicago	2.50	2.85	2.85	2.75@ 3.00
Ind. 4th Vein screenings	Chicago	2.25	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	2.60	2.85	2.85	2.75@ 3.00
Ind. 5th Vein mine run	Chicago	2.60	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	2.40	1.55	1.55	1.50@ 1.60
Standard lump	St. Louis	.....	2.50	2.50	**2.50**
Standard mine run	St. Louis	.....	1.85	1.85	1.75@ 2.00
Standard screenings	St. Louis	.....	1.10	1.10	**1.50**
West Ky. lump	Louisville	2.90	2.50	2.60	2.50@ 2.75
West Ky. mine run	Louisville	2.65	2.10	1.95	*1.85@ 2.00*
West Ky. screenings	Louisville	2.65	1.90	1.85	*1.85@ 1.85*
West Ky. lump	Chicago	.....	2.60	2.60	2.50@ 2.75
West Ky. mine run	Chicago	.....	1.80	1.80	1.75@ 1.85
South and Southwest					
Big Seam lump	Birmingham	2.00	2.50	2.50	**2.70**
Big Seam mine run	Birmingham	1.70	2.10	2.10	*1.85@ 2.25*
Big Seam (washed)	Birmingham	2.15	2.35	2.35	2.25@ 2.50
S. E. Ky. lump	Chicago	.....	4.00	3.75	3.50@ 4.00
S. E. Ky. mine run	Chicago	.....	2.85	2.85	2.75@ 3.00
S. E. Ky. lump	Louisville	2.90	3.85	4.00	**3.75@ 4.50**
S. E. Ky. mine run	Louisville	2.80	2.60	2.75	*2.15@ 2.75*
S. E. Ky. screenings	Louisville	2.60	2.20	2.25	*1.80@ 2.00*
S. E. Ky. lump	Cincinnati	2.60	4.00	3.50	*2.75@ 4.00*
S. E. Ky. mine run	Cincinnati	2.60	2.25	2.25	2.00@ 2.50
S. E. Ky. screenings	Cincinnati	2.50	2.10	2.00	1.75@ 2.25
Kansas lump	Kansas City	4.25	3.85	3.85	3.25@ 4.50
Kansas mine run	Kansas City	4.15	3.25	3.25	3.00@ 3.50
Kansas screenings	Kansas City	2.65	2.60	2.60	2.50@ 2.75

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Latest Pre-Strike Company	April 30, 1923 Independent	April 30, 1923 Company	May 7, 1923† Independent	May 7, 1923† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.35	.....	$7.75@$8.35
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	$8.50@11.00	8.00@ 8.35	$8.50@11.00	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.50	8.10@ 8.35	9.25@ 9.50	8.10@ 8.35
Egg	Chicago*	5.09	7.50	8.25	12.00@12.50	7.20@ 8.25	12.00@12.50	7.20@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	8.50@11.00	8.00@ 8.35	8.50@11.00	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Stove	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.25	12.00@12.50	7.35@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.20	8.50@11.00	8.00@ 8.35	8.50@ 11.00	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.15	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.35	12.00@12.50	7.35@ 8.35
Ranges	New York	2.34	.....	.....	.....	8.30	.....	8.30
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.30@ 7.25	6.00@ 6.30	6.30@ 7.25	6.00@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.00	3.50	2.25@ 3.50	3.50@ 4.15	2.25@ 3.50	3.50@ 4.15
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.00@ 3.50	3.50	3.00@ 3.50	3.50
Rice	New York	2.22	2.00@ 2.50	2.50	1.75@ 2.50	2.50	*1.60@ 2.50*	2.50
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Barley	New York	2.22	1.50@ 1.85	1.50	1.00@ 1.50	1.50	1.00@ 1.50	1.50
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.15@ 1.50	1.50	1.15@ 1.50	1.50
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	1.60	1.50@ 1.60	1.60

*Net tons, f.o.b. mines †Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 220, Week of May 7, 1923. Average spot price for same period $2.66. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

as ever. The demand for everything else in that market is light, indeed. Anthracite and smokeless are beginning to go into storage in a small way, however. Mt. Olive and Standard are slow in this direction. Retail prices did not increase on May 1 when the field price of southern Illinois domestic advanced from $3.85 to $4.10. Evidently there is a good deal of coal on hand at April prices to be cleaned up before any changes are made to householders.

Kentucky Gets Busy

There has been some fair movement of coal from eastern Kentucky the past week, due to better car supply. It is reported that the Hazard field established a one-day loading record on April 25, when a good car supply was set in. Prepared sizes are in better demand as a result of Northern stocking movement, but increased production of prepared is making for a weaker market on screenings, in spite of fair industrial consumption.

At Duluth only screenings are left on the docks. Dock men assert that all other coal has already been contracted for. With this condition dealers and consumers are holding off buying, waiting for whatever change in price the new coal may bring.

According to the most authoritative reports obtainable the Youghiogheny and Hocking coal will reach Duluth at $675@$7. This is $1.50 lower than the last price and is $2 lower than the price two months ago. Run of pile, it is said, will open up from $6 to $6.25, and screenings will be between $4.50 and $4.75. Screenings are now quoted at $4, but those offered contain much old stock that is damaged. There has been no price yet on Pocahontas lump, but mine run will probably open up from $7.50 to $7.75. The present price is $8.50. It is felt that these lower prices will give the docks here a better chance to compete with coal brought all rail from southern Illinois all rail, but dock men hold to their position that unless some adjustment is made not more than half the usual supply of coal will be brought up this year.

There has been no anthracite loaded out of lower Lake ports as yet. The situation at the Head-of-the Lakes is serious. There is no hard coal left on the docks, and public restaurants and other consumers who must have coal for their stoves are bringing some in all-rail.

Beginning with May 1 at Milwaukee a radical reduction was made on all bituminous coal, the cut varying from $1.25 to $3 per ton. Anthracite is held unchanged in price. The wholesale price of Pocahontas screened was advanced 25c. per ton. Coke was cut $1.10 per ton on all sizes.

West Drones Along

Nothing is disturbing the calm of the Western coal trade just now except feverish activity to find markets on the part of those companies whose mines are still running three or four days a week. In the Kansas, Oklahoma, and Arkansas region, union officials estimate between 8,000 and 10,000 men are idle. In Colorado May prices to encourage storing have put a little coal in cellars but the market is dull. Best bituminous lump is selling for $5.15. Slack ranges from $1.75 to $2.50. Lignite lump is offered at $2.75. Another landslide has choked tunnel No. 52 on the Moffat road, thus shutting Routt County coal out of the Denver market for a week or more.

In Utah there is a movement to eliminate certain "superfluous" sizes. Two or three of the biggest operators have announced new low prices on the four sizes they expect to make in the future. This circular reads: Lump, $4.50; domestic lump, $4; stove, $4, and slack $1.75. This is a decrease in mine price, but retailers have not yet dropped their price to consumers.

Ohio Markets in Doldrums

Quality of coal offered is playing an important part in the Cincinnati market. Houses with the grades wanted by the trade are getting what little business there is to be had. There was a slight note of weakness running through the smokeless trade. At Columbus the lateness of the Lake season put a damper on the trade. Steam buyers are holding off and while some are putting in a supply of coal others are playing a waiting game. Utilities and railroads are the best buyers of steam coals, while iron and steel plants are showing a tendency to come into the market. Domestic trade shows some signs of revival and dealers are looking for high-grade coals. Although a fair tonnage of Pocahontas is coming into this market, it is scarce. Contract making continues slow in the eastern Ohio field with commercial steam-coal users, while operators and jobbers are indifferent because of the low prices prevailing in the spot market.

The West Virginia market reports a growing demand for low-volatile coal with prices steadily advancing, smokeless mine-run ranging $3.75@$4.25, f.o.b. mine. There has been little demand in West Virginia for high-volatile mine-run.

There has been a further curtailment in production of high-grade gas coal in the Pittsburgh district because producers were not able to get in the spot market what they considered the real value for their product. The railroads and line consumers are well supplied with their contract coals, resulting in spot trading being light. Business at Buffalo is slow.

Few Developments in New England Market

The market in New England drags along with few developments. A relatively small tonnage of central Pennsylvania coal that was placed during the week netted very low prices, about as low as producers could be expected to

operate on the present wage scale. The territory has been combed over by sales agents to such extent that buyers are reluctant to buy more than small lots. Each week sees even the choicest grades on an easier price basis and some shippers are willing to extend delivery through the summer on present spot quotations. There is little comprehensive business in sight, and the trade is settling down to what promises to be a dull season.

At Hampton Roads there is ample coal on hand for all requirements. Current demand coastwise is light, but there are indications that Pocahontas and New River will be held on higher levels than a year ago.

For inland distribution at Boston, Providence and Portland the best grades continue to offer at $8.25 per gross ton on cars, with seconds at $8 or less. Only moderate tonnages are available, for shippers without their own rehandling facilities are disposed not to risk sending coal forward unsold.

Discriminating buyers near tidewater who last year bought Hampton Roads coals are somewhat puzzled this year to know whether to wait for reduced prices on Pocahontas and New River or to accept deliveries all-rail from central Pennsylvania at current quotations which at present are somewhat more favorable to the purchaser.

A small tonnage of Pennsylvania grades is coming forward by water from Philadelphia, but it is for the most part destined to shoal-water points where Hampton Roads rates of freight are not competitive. Railroad fuel also is being shipped from Philadelphia as well as from Baltimore from usual sources on season contracts. Fairmont coals are being offered at prices well down to $2 per net ton at the mines.

Trade at New York Optimistic

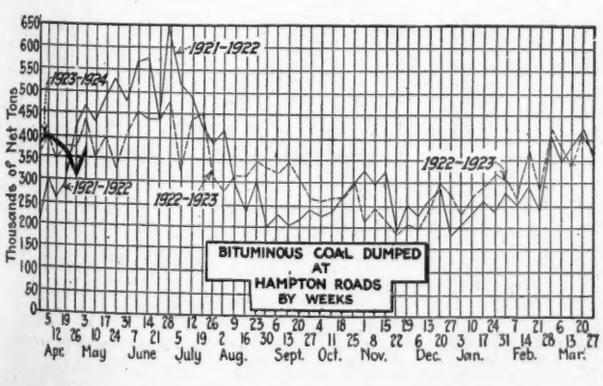
There is considerable optimism among the trade at New York and an active summer with higher prices is anticipated. Conditions at tidewater were weaker. There were 3,994 cars at the local piers on May 4, and some sales at low prices were reported. Many inquiries were received and some shippers contended the situation was in better shape generally than for the past few weeks. Buying was slow at Philadelphia.

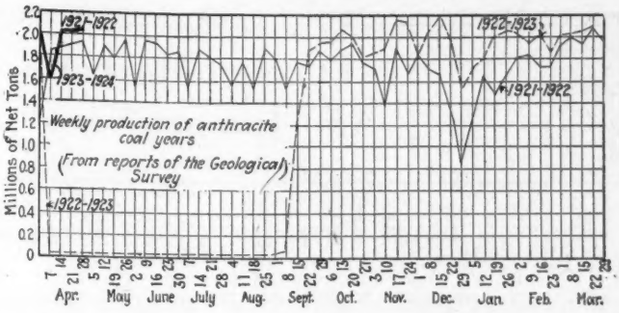
The market at Baltimore was slow. Prices for last week show a slight decline. Wagon mines and small operations in the Alabama field are beginning to feel the pinch of the limited demand for steam coal.

The first cargoes of coal arrived at Lake Michigan and Lake Superior docks last week in spite of an ice crush blown in by the wind above the "Soo" in Lake Superior. By the end of the week 500,000 tons had reached Milwaukee and vessels were putting into the Duluth harbor. However, considerable ice continues in the upper parts of the Lakes and it is not expected the season will fully open for at least another week. Meanwhile shippers are picking up odd lots at bargain prices. During the week ended May 7 there were dumped 788,227 tons of cargo coal and 28,365 tons of fuel coal, making the dumpings for the season 1,005,556 tons of cargo coal and 70,752 tons of fuel coal.

Consumers Press for Domestic Anthracite

Consumers continue to press retail dealers for their winter supply of anthracite domestic sizes, with the result that scarcely any of the dealers have been able to start filling their own bins. All of the domestic coals move





quickly although in the New York market egg and stove are in heaviest demand.

"Well-sustained activity marked the reports of anthracite shipments in the week ended April 28," says the Geological Survey, "and for the eighth consecutive week, excluding only the week of the Eight-Hour Day holiday, the output passed the two-million ton mark. Reports from the anthracite carriers show that 40,458 cars were loaded during the week. On this basis it is estimated that the total output was 2,116,000 net tons, including mine fuel, sales to the local trade, and dredge and washery output. This was an increase over the figure for the preceding week of 51,000 tons. In the corresponding week of 1922 there was practically no production of anthracite owing to the miner's strike.

Beehive Coke Production Recedes

The production of beehive coke in the week ended April 28 is estimated at 424,000 net tons, according to the Geological Survey report, a decrease of about 13,000 tons from that of the week before. The decrease, says the report, occurred in Pennsylvania and Ohio. The cumulative output of beehive coke for the year to date is placed at 6,419,000 tons, as compared with 2,305,900 net tons in 1922, 2,850,000 net tons in 1921, 7,374,000 net tons in 1920 and 7,403,000 net tons in 1919.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 30, 1922 Inclusive	Jan. 1 to Apr. 21, 1923 Inclusive	Week Ended April 21 1923
U. S. Total	55.7	....	....	....
Alabama	64.6	84.7	89.0	(a)
Somerset County	74.9	36.3	32.5	54.6
Panhandle, W. Va.	51.3	57.3	55.6	56.2
Westmoreland	58.8	65.8	56.0	68.5
Virginia	59.9	55.7	55.7	63.5
Harlan	54.8	22.1	23.5	28.6
Hazard	58.4	16.4	22.6	29.7
Pocahontas	60.0	36.6	38.2	40.7
Tug River	63.7	28.8	35.5	42.8
Logan	61.1	26.2	31.0	32.4
Cumberland-Piedmont	50.6	31.7	48.8	60.4
Winding Gulf	64.3	30.4	34.8	44.1
Kenova-Thacker	54.3	42.4	34.9	45.2
N. E. Kentucky	47.7	28.4	27.9	26.0
New River	37.9	31.6	36.3	41.5
Oklahoma	59.6	59.1	43.5	49.1
Iowa	78.4	75.9	76.7	40.7
Ohio, Eastern	46.6	40.8	35.8	41.5
Missouri	66.8	76.3	73.5	37.3
Illinois	54.5	49.9	46.4	35.8
Kansas	54.9	55.9	46.8	39.5
Indiana	53.8	37.7	51.1	42.0
Pittsburgh†	39.8	41.2	35.5	52.6
Central Pennsylvania	50.2	53.4	48.1	64.9
Fairmont	44.0	35.5	35.9	52.8
Western Kentucky	37.7	32.4	32.9	32.1
Pittsburgh*	31.9	56.1	59.4	56.6
Kanawha	13.0	15.6	23.4	29.3
Ohio, Southern	24.3	38.1	32.0	26.1

* Rail and river mines combined.
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended April 21, 1923	957,743	179,762
Previous week	946,759	182,356
Same week in 1922	706,137	63,364

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	Car Shortage
April 22, 1923	11,062	2,582	44,299	20,725
Same date in 1922	371,764	229,892	....	....
April 14, 1923	14,241	3,259	48,584	21,025

Foreign Market And Export News

British Coal Output Again Exceeds Record

The mines of Great Britain continued their record breaking production. During the week ended April 21 the output was officially reported as 5,825,000 tons according to a cable to *Coal Age*. This was 48,000 tons more than the output for the previous week and a new high record for the year, as well as topping all weekly production figures for 1922.

British Board of Trade statistics received by the Bankers Trust Co. of New York place the production for the first three months of 1923 at 71,042,500 tons, as compared with 62,201,700 tons in the corresponding period of 1922, and also 2,000,000 tons greater than the production for the final three months of 1922.

It is also reported that several contracts have been made in the South Wales market for South America deliveries during the second half of 1923 and that Germany has been freely placing orders for July-September delivery at less than current prices on some coals.

Quotations eased slightly last week.

Congestion at the ports was said to have been slightly reduced during the past couple of weeks and it is expected to disappear entirely soon.

French Coal Situation Easier

The settlement of the Lorraine miners' strike somewhat eased the situation as regards French industrial coals.

Reconstruction of the devastated colleries continues uninterrupted and production is steadily increasing. During March the Lens Co. produced about 100,000 tons and the Couttieries Co. about 150,000 tons.

Efforts made by the French authorities to increase the deliveries of Ruhr coke to French blast-furnaces met with some success. During the first sixteen days of April, 33,400 tons of coke went to France through the Ehrang sorting station. Increased shipments are reported since then, the Societe des Cokes de Hauts-Fourneaux receiving about 4,500 to 5,000 tons daily since that time. By the end of April it was hoped that 9,000 to 10,000 tons of coke would be loaded daily from the stocks seized in the Ruhr, 10 per cent going to Belgium and 90 per cent to France. It is estimated that the coke in storage in the Ruhr district aggregate about 900,000 tons and coal about 1,800,000 tons, but the measures taken by French authorities for seizing part of these tonnages only apply to 500,000 tons of coke and 400,000 tons of coal. On April 21 it was said that 10,370 tons of coke and 5,090 tons of coal were shipped from the storage piles.

The first shipments of American coke have arrived at Antwerp and Dunkirk. The percentage of dust and small coke as the result of the long journey and the handlings is said to have been large with the result that the coke will only be usable after being mixed with others.

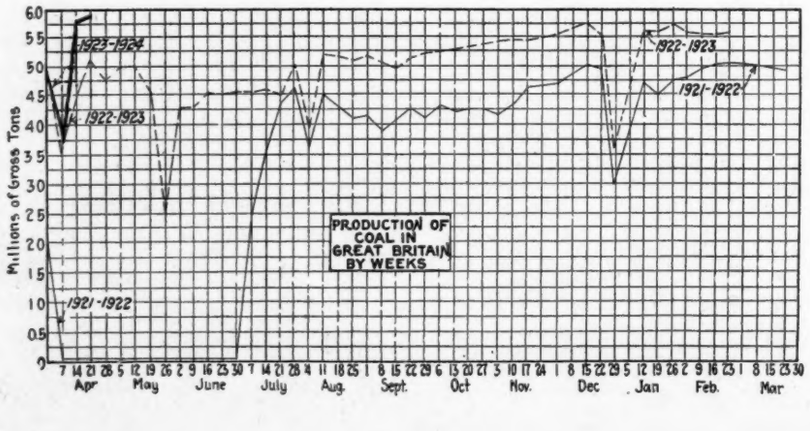
Export Clearances, Week Ended April 28, 1923.

FROM HAMPTON ROADS

For Brazil:	Net Tons
Br. SS. Nilemede, for Rio de Janeiro	5,364
Amer. SS. Orient, for Rio de Janeiro	5,754
Du. SS. Hilversum, for Buenos Aires	5,861
For Cuba:	
Nor. SS. H. K. Waage, for Cienfuegos	2,400
Amer. Schr. Mary Bradford, for Cienfuegos	1,601
Nor. SS. Almora, for Havana	3,552
For France:	
Br. SS. Clan Buchanan, for Marseilles	7,243
For Holland:	
Du. SS. Gemma, for Rotterdam	11,234
Du. SS. Dubhe, for Sluiskill	4,974
For West Indies:	
Nor. SS. Bratland, for Curacao	2,953
Dan. SS. Nordst Jernen, for Port Castries	3,363
Dan. SS. Haderslev, for Bridgetown	3,113

FROM PHILADELPHIA

For Belgium:	
Dan. SS. Marie Maersk, for Antwerp (coke)	...
Br. SS. Paris City, for Antwerp (coke)	...
Br. SS. Naperian, for Antwerp (coke)	...
For Cuba:	
Nor. SS. Munorway, for Havana	...
For France:	
Swed. SS. C. F. Liljewalch, for St. Nazaire	...
Belg. SS. Gasconier, for Dunkirk (coke)	3,149
For Porto Rico:	
Amer. SS. Sioux, for San Juan	...



United States March Domestic Coal Exports

(In Gross Tons)

	1922	1923
Coal—		
Anthracite, gross tons	294,753	399,563
Value	$3,124,345	$4,405,493
Bituminous, gross tons	1,187,313	1,219,970
Value	$6,311,540	$7,880,657
Coke, gross tons	25,435	97,521
Value	$236,703	$1,124,789
	Nine Months Ended March	
	1922	1923
Coal—		
Anthracite, gross tons	2,781,951	2,447,385
Value	$30,204,764	$27,027,146
Bituminous, gross tons	11,380,704	9,901,230
Value	$59,622,414	$63,545,598
Coke, gross tons	218,130	536,000
Value	$1,903,718	$5,743,121

Stronger Market at Hampton Roads

Business at Hampton Roads was better last week. Though there was less activity at the Norfolk & Western piers, the general trade was brighter.

Export business improved, showing signs of passing the peak of March foreign trade. Coastwise business was lighter, but the bunker trade held firm. The tone of the market was strong, and the outlook very promising.

Prices of domestic coal were reduced, Pocahontas egg coal selling for $12 instead of $14, and run of mine selling for $9 instead of $11. Anthracite dropped from $17 to $16 temporarily.

Absence of contracts was one of the features of the market, but the trade was looking forward to railroad contracts which are expected to be let June 1.

Hampton Roads Pier Situation

	April 26	May 3
N. & W. piers, Lamberts Pt.:		
Cars on hand	1,307	1,178
Tons on hand	88,783	76,049
Tons dumped for week	95,033	89,758
Tonnage waiting	10,000	.....
Virginian Ry. piers, Sewalls Pt.:		
Cars on hand	1,623	1,641
Tons on hand	94,830	94,660
Tons dumped for week	117,747	126,152
Tonnage waiting	3,989	10,500
C. & O. piers, Newport News:		
Cars on hand	2,526	1,927
Tons on hand	135,560	101,900
Tons dumped for week	76,377	101,297
Tonnage waiting	9,955	13,185

Pier and Bunker Prices, Gross Tons

PIERS

	April 28	May 5†
Pool 9, New York	$6.00@$6.45	*5.75@ 6.85*
Pool 10, New York	5.25@ 5.75	*5.20@ 5.70*
Pool 11, New York	4.50@ 5.00	*4.25@ 5.00*
Pool 9, Philadelphia	6.25@ 6.70	*6.20@ 6.70*
Pool 10, Philadelphia	5.30@ 5.70	*5.25@ 5.65*
Pool 11, Philadelphia	4.30@ 4.70	*4.20@ 4.65*
Pool 1, Hamp. Roads	6.40	*6.25@ 6.50*
Pools 5-6-7, Hamp. Rds.	5.30	**5.50**
Pool 2, Hamp. Roads	6.40	6.25@ 6.50

BUNKERS

Pool 9, New York	6.30@ 6.75	*6.05@ 6.55*
Pool 10, New York	5.55@ 6.05	*5.50@ 6.00*
Pool 11, New York	4.80@ 5.30	*4.55@ 5.30*
Pool 9, Philadelphia	6.65@ 6.80	*6.60@ 6.75*
Pool 10, Philadelphia	5.55@ 6.10	*5.50@ 6.00*
Pool 11, Philadelphia	4.60@ 5.05	*4.50@ 5.00*
Pool 1, Hamp. Roads	6.50	6.50
Pool 2, Hamp. Roads	6.50	6.50

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to *Coal Age*

	April 28	May 5†
Admiralty, large	40s.@42s.6d.	*38s.@40s.*
Steam, smalls	30s.@31s.	*26s.@30s.*
Newcastle:		
Best steams	35s.	*34s.6d.@35s.*
Best gas	30s.@32s.6d.	*33s.@35s.*
Best bunkers	34s.@35s.	*34s.@36s.*

† Advances over previous week shown in heavy type; declines in *italics*.

News Items From Field and Trade

ILLINOIS

The Bradbury-Scullin Mining Co., a new concern at Herrin, has just acquired the Prosperity Mine, near Carterville, and will operate the property in addition to the Lady Lucky Mine No. 1, which was taken over by the company some time ago. The company was recently formed by a group of Williamson County men headed by the two whose names the company bears. **L. C. Meid**, of St. Louis, recently joined the company as head salesman.

The Paradise Coal & Coke Co. announces that its mine at Paradise will be idle for a period of four weeks or longer. During the time the plant is shut down, repairs will be made in and around the mine, including retimbering the shaft and making changes in other parts of the property.

The strike of linemen, electricians and construction men of the Central Illinois Public Service Co., **has been settled.** The company, which furnishes power for over 75 mines in the district, has had its power supply curtailed for six weeks or more as a result of the strike. Many mines were heavy sufferers to the extent of having to close down and towns and business in general suffered heavy losses and inconveniences.

The Old Ben Coal Corporation announces the reopening of its Mine No. 15, at Christopher, May 1. This mine was one of five which were shut down by the company several weeks ago for repairs while the market was at its lowest ebb.

The hoisting record of the Bobby Dick mine near Freeman was shattered recently when a total of 2,892 tons of coal was brought to the surface in eight hours. The day's work totaled 1,166 dumps and loaded 62 railroad cars. The mine employs 310 men, 221 of whom are loaders, making **an average of 13 tons per loader** on that day and 9.3 tons per man in the mine.

No. 1 Mine of the **St. Louis & O'Fallon Coal Co.**, the Lenzburg mine of **Columbia Coal Co.** and **Eureka No. 1 Mine** at Marissa have been closed on account of no markets.

Mine No. 1 of the **Jewel Coal & Mining Co.**, at Duquoin, has been closed for an indefinite period. The mine operated by the **Madison Coal Co.** at Tilden, which suspended operations temporarily a few weeks ago, will resume soon.

A contract for extensive improvements, the cost of which will be in the neighborhood of $30,000 on the mine operated by the **West End Coal Co.**, located one mile west of Springfield on the Baltimore & Ohio R.R., has been closed and the mine shut down May 1 to enable the repair work to start, according to an announcement made by the officials of the company. A shaker screen of all steel construction will be installed, together with new conveyors and elevators. The Wisconsin Bridge & Iron Co. is to furnish the structural steel and the Link Belt Co. will furnish all other material. The present structure has been in service since 1903 and while the equipment is still serviceable, the operators of the mine believe it best to install more modern equipment that will meet the demands of an expanding business with greater efficiency.

The **Sheridan Wyoming Coal Co.**, 910 South Michigan Ave., Chicago, is now selling Kathleen coal for the Union Colliery Co. in the Illinois and Wisconsin territory.

Mine No. 6 of the Peabody Coal Co., at Springfield, went after the coal-hoisting record for the district and broke it by 289 tons for eight hours' work one day recently. The 620 men employed in the mine brought a total of 3,122 tons to the surface, sufficient to load sixty-eight railroad cars. The best previous high mark was 2,833 tons.

The following coal companies were incorporated recently: **Colonial Collieries Co.**, 38 South Dearborn St., Chicago; capital, $500,000; incorporators, Thomas J. Mylet, Edward G. Sternberg and Herbert Lanigan. **The Paramount Fuel Co.**, 343 South Dearborn St., Chicago; capital stock, $30,000; incorporators, J. F. O'Malley, Joseph J. Lellvelt and F. W. J. Sexton. **The Chicago Norfolk Western Coal Co.**, 343 South Dearborn St., Chicago; capital, $20,000; incorporators, L. C. Sieber, C. B. Sieber and J. L. Johnson.

W. C. Schroeder has been made vice-president of the Sebastian Coal Co., of Chicago.

INDIANA

Declines ranging from 25c. to $2 a ton in the retail prices of practically every variety of coal were announced recently in spring revisions of quotations by Indianapolis coal dealers. The new prices are intended for quantity buying of coal for use next winter, merchants said. Indiana lump coal dropped 50c. a ton on the top grades, the range being $5.95@6.75, while Indiana egg and Indiana mine run coal dropped $1 a ton to $7.50. Pocahontas mine run is down 50c. to $1.50 a ton to $9, and Pocahontas lump fell $1 to $2.50 to $11. Eastern Kentucky lump and West Virginia lump dropped $1.50 a ton to $9, and cannel declined $1 to $13. New prices of coke are about $1 a ton cheaper. No changes were made in prices of Blossburg smithing and anthracite.

Bids for a year's supply of coal, approximately 150,000 tons, for state institutions **will be opened by the state purchasing committee soon.** Last year the committee bought 84,675 tons of mine-run coal at an average price of $2.60 a ton; 32,300 tons of pea and slack at an average of $2 a ton, and 29,000 tons of egg size at an average of $2.75 a ton. Lower prices for the next year's supply are expected.

Charters were granted recently to the following coal companies: **Williams Coal Co.**, Evansville; capital, $300,000; directors, Robert R. Williams, Joseph Wastjer and William W. Gray. **Midland No. 4 Coal Co.**, Jasonville; capital, $50,000; directors, Roy E. Price, W. F. Ellis and Wilbur S. Hays. **John H. Scott Coal Co., Inc.**, Linton; capital, $5,000; directors, John H. Scott, James D. Scott and John O. Travis.

The Indiana Coal Dealers' Association has under consideration a **proposal to change its name to the Indiana Coal Service Bureau, Inc.**, and to make its service statewide. Statistical information and other data would be provided in a more comprehensive way than at present.

IOWA

Appanoose County in 1922 for the first time in history, led the state in coal production, according to the yearly report of **L. E. Stamm**, secretary of the state board of mine inspectors of Iowa. The county's production was approximately a million tons. Mines in that county employ 3,527 men, the largest number employed in mining in any county in the state. Monroe county, with more than 2,500 miners, followed, while Polk county, third, had a total of approximately 2,000. A total of 13,155 men were engaged in mining in Iowa in 1921 while this number was slightly increased in 1922. Mine accidents in Iowa during 1922 took a toll of eighteen lives. Falls of slate caused twelve of the deaths.

In order **to promote thrift and neatness among its tenants**, the **Madison Coal Corporation**, has announced a list of cash prizes for the best-kept and best-appearing yards of its employees, and another list for the best kept vegetable gardens. The first prize for each contest is $35, the second $30 each, and down to $5, which is the seventh and lowest cash prize offered, a total of $140 for the best kept and best appearing yards and $140 for the best vegetable gardens, or a grand total of $280 in each mining town of the company.

KENTUCKY

News was received April 25 from Madisonville that **workers have again been fired upon as they were leaving the plant of the Pontiac Coal Co.**, near Earlington, where five workers were fired upon from ambush on April 17. The company has offered a reward of $1,000 for arrest and conviction, and county authorities are starting an investigation. These two outbursts at the one plant have been the only ones in the strike field.

Double-tracking of the Louisville & Nashville from Pineville to Harlan, approximately 40 miles, completing the double track of the Cumberland Valley division, from Corbin to the center of the rich southeastern Kentucky coal fields, has been announced. The new double track up the Harlan road will increase the capacity, giving the road sufficient trackage to haul all the coal that can be loaded on the division. Double track beyond Harlan is hardly necessary, in the opinion of coal men, with the road dividing there into the Poor Fork branch, going to Benham and Lynch, the Clover Fork branch and the Martin's Fork branch.

The Ferndale Mining Co., Bell County, capital $3,000, has been chartered by J. M. Lunce and J. C. Knuckles, of Ferndale, and E. A. Smothers, of Pineville.

The Rex Harlan Coal Co., Whitley County, capital $100,000, has been chartered by T. J. Roberts, T. E. Mahan and B. F. Cheely, all of Williamsburg.

The Elser Coal Co., of Clark, has reduced its capital stock from $125,000 to $100,000.

The fight to prevent an increase in tax assessment from $13,000,000 to $18,600,000 **has been dropped by the officials of Perry County, Ky.**, following conferences with the State Tax Commission, and an agreement to withdraw the injunction suit that was filed. **The county officials have agreed to try to increase assessments for 1923** as directed by the state commission. Most of this increase will fall on the coal interests, as Perry is one of the largest coal counties of the state and hasn't much else to tax. Coal operators had made a hard fight against the increase, and had appeared before the argument.

Judge A. M. J. Cochran, of the Federal Court, Eastern Kentucky division, has set for **hearing on May 21**, at Lexington, **the suit of T. F. Fuller against the F. S. Peabody Coal Syndicate**, the Fordson Coal Co. interests and the Semet Solvay Co. and others, a special session of the court being held to hear the arguments. **Fuller alleges that the lands sold by the Peabody syndicate to Henry Ford** are worth $15,000,000 and that he holds an interest in the property valued at $2,500,000.

The coal mining town of Combs, in Perry County, was fire swept on May 1. The Superior Coal Co. lost a commissary store, while a picture theater and other buildings were burned.

The St. Mohiel Coal Co. of McCreary County, has filed amended articles, increasing capital from $25,000 to $40,000.

Guy H. Sowards, who for the past several years has been with the traffic office of the West Kentucky Coal Bureau, on May 1 became resident manager in charge of the Louisville office of the Southwestern Fuel Co., sales agents for the Black Diamond Coal Co., of Drakesboro. B. A. Word, an independent traffic expert, will look after traffic matters for the West Kentucky Coal Bureau.

The coal mines **of the Hazard field** with a loading of 1,177 cars on April 25 **broke all previous records** for a day's loading on the Eastern Kentucky division of the Louisville & Nashville R.R.

At Jeffersonville, Ind., work of setting up six all steel coal barges from fashioned steel was started recently, the six barges being for the E. T. Slider Co., of New Albany and Louisville, operating yards at both points and towing coal and sand and gravel on the Ohio River.

NEW YORK

H. G. Stenersen has been appointed assistant to the president of the Coal & Iron National Bank of New York. Mr. Stenersen was formerly with the National Bank of Commerce as assistant cashier in charge of business development in the First and Second Federal Reserve districts. In 1917 he was the pioneer in introducing the use of acceptances among New England cotton mills in financing the purchase of cotton.

E. W. Rockafellow, formerly assistant general sales manager of the Western Electric Co., resigned May 1 to accept the office of **vice-president of the National Pole Co.**, of Escanaba, Mich. He will represent the latter company at 220 Broadway, New York City.

W. H. Bradford & Co., Inc., have removed their New York office from 17 East 42nd St. **to the Barrett Building, 40 Rector St.**

OHIO

The Pocahontas-Kanawha Coal Co., established in Dayton, has opened a Cincinnati office with Fred Dunker, formerly sales manager for the Western Coal Co., in charge.

The Republic Iron & Steel Co. has awarded a contract for the construction of **a 60-oven byproduct coke plant** at Youngstown.

The Kearns Coal Co., of Cincinnati, has been incorporated under the Ohio laws with a capital of $200,000. The incorporators are Eugene Buskirk, George M. Kearns, R. H. McCormick, Howard Ragland and P. T. Foley.

The Maple Grove Coal Co., Columbus, has been chartered with a capital of $25,000 to mine and sell coal. Incorporators are: Edward E. Riley, S. C. Longby, S. W. Krumm, Walter Mulby and Charles E. Belcher.

Sealed proposals will be received at the office of the Clerk of the Board of Education, eighth floor, Denton Building, Seventh and Race Streets, Cincinnati, Ohio, until 12 o'clock noon, Monday, May 28, 1923, **for supplying the various public schools in the school district of Cincinnati with coal** in accordance with specifications on file in the office of the Visiting Engineer of said Board of Education, at No. 511 West Court Street.

The Ohio Legislature has passed a bill over the veto of Governor Donahey reimbursing coal producers and shippers for coal furnished various state institutions more than a year ago on contracts which were later declared illegal by the courts. In their appeal to the Legislature the various coal companies contended that they were not a party to the illegality in the contracts and should be paid for the coal furnished. The Legislature saw it that way and passed the bills which were vetoed and later passed over the veto. About $100,000 will be distributed to about a dozen coal companies in Ohio.

The Valley Coal Co. closed its Cincinnati office on May 1.

The Cincinnati Coal Trade Golf Association was recently launched at a meeting of sales representatives, wholesalers and producers at a meeting held at the Highland Country Club and its organization was completed at a further meeting that was held at the Ft. Mitchell Country Club. The association will be modeled along the line of those established in Chicago, Philadelphia and New York.

PENNSYLVANIA

Orders for coal that will keep the mines of the **Bechly Coal Co.**, at Portage, **busy for a year**, have been received by the officials of the company. The company has the assurance of the Pennsylvania R.R. that all assigned cars necessary will be supplied. From 200 to 300 men will be required.

T. Stanton Davis and W. C. Schiffer, both of Ebensburg, **plan to open a mine** near the Chickaree school house, along the William Penn Highway, west of Ebensburg to supply Ebensburg direct with fuel. The mine taps the "B" or Miller seam and Davis and Schiffer control more than one hundred acres. The coal will be hauled over the William Penn highway by truck.

The Jefferson & Clearfield Coal & Iron Co. reports for 1922 a balance for common dividends of $382,521, equal to $25.50 a share on the 15,000 shares outstanding. This compares with a deficit of $153,099 in 1921. On December 31 last the profit and loss surplus stood at $5,867,554, as compared with $5,785,034 on December 31, 1921. At the end of last year current assets were $3,906,144, and current liabilities $1,244,412, leaving net working capital of $2,661,732.

Westmoreland Coal Co. has declared a stock dividend of 33⅓ per cent on the outstanding $7,500,000 capital stock, payable May 15 to stockholders of record April 28, from the undivided profits of the company in capital stock of the company, which was increased at the shareholders' meeting April 4.

A deal was closed last week at Ebensburg, Cambria County, whereby the **Pennsylvania Coal & Coke Corporation becomes the owner of 277 acres of "B" seam coal** located in Barr township. The purchase was made from the Carrolltown Coal Co. The consideration was $520,000. The entire tract is adjacent to the lines of the Pennsylvania R.R.

State charters have been issued recently for the following coal mining companies at Harrisburg; **Blanchard Zanesville Mining Co.**, Pittsburgh, capital, $450,000; treasurer, William Wieman, 426 Fulton Building, Pittsburgh. Incorporators: William G. Blanchard, P. W. Ranier and R. E. Allen, Pittsburgh. **Bowman Coal Co.**, Pittsburgh, $10,000; incorporators, Ralph D. McKee, Avalon, treasurer, Frederick E. Milligan and Elwood B. Hawarth, Jr., Pittsburgh. **Beadling Mining Co.**, Pittsburgh, $20,000; incorporators, Charles E. Kitchen, 3222 Middleton Road, Pittsburgh, treasurer, Vincent R. Beadling, Pittsburgh and John Barufaldi, Morgan. **Windber Fuel Co.**, Windber, $50,000; incorporators: L. L. Faust, Windber, treasurer, L. R. Ashenfelten, Philadelphia, and Fred J. Balch, Springfield, Mass.

The Acme Coal Mining Co. has declared a dividend of 20c. a share, payable June 5 to shareholders of new stock only, of record May 26. Stockholders have been notified that the old stock of $1 par value can be exchanged for stock of $10 par at the Empire Trust Co., New York City.

The Bertha Coal Co. of Pittsburgh, is to have a Roberts and Schaefer preparation and loading plant at its Dinsmore mine.

Slattery Bros., Inc., are making preparations **to open a new mine** in the Schuylkill Valley, east of Port Carbon. Wade M. Reed, consulting mining engineer, will have complete charge of this development work together with this company's Bell Colliery operation.

The Traylor-Dewey Contracting Co., of Allentown, has recently been reincorporated under the name of **The Cement-Gun Contracting Co.** and under that name will continue to specialize in construction and repair by means of the cement-gun and in addition will construct reservoirs and other plain or reinforced concrete structures.

The Pittsburgh office of the central district **of the Cutler-Hammer Mfg. Co.**, Milwaukee, **will move** on May 1 from the Farmers' Bank Building **to Room 950 to 953, Century Building,** located on Seventh Street between Penn Avenue and Duquesne Way. A. G. Pierce is manager of the central district.

The Penn Central Power Co., a subsidiary of the Penn Central Light & Power Co., **has become the owner of 2,600 acres of valuable coal land** in the Broad Top township (Huntingdon County) district. The land was purchased from the Kay Mining Co., of Everett, Bedford County. The Penn Central Power Co. is erecting an immense power plant along the Raystown branch of the Juniata River at Saxton. There is plenty of water for power now, but the company has acquired the coal, which opens out right at the plant, in case fuel is needed to replace the water power at some future time.

A state charter has been issued to the **Conlan-Pace Coal Mining Co.**, Pittston, which has a capital stock of $45,000. Bernard J. Conlan, 42 Church Street, Pittston, is treasurer, and one of the incorporators, the others being Daniel P. Price, Scranton, and Ellen M. Conlan, Pittston.

Bert E. Holifield recently opened an office in the Miners' Bank Building, Wilkes-Barre, and is manufacturers' agent in the anthracite region for the **Chicago Pneumatic Tool Co., the Ironton Engine Co. and the Bennington Scale Co.**

Angus W. Louther, who was assistant to W. H. Kramer, general manager of the Consolidation Coal Co.'s Pennsylvania division, has resigned his place **to accept the managership of the coal mines of the Bethlehem Steel Co.** in West Virginia. He succeeds **Samuel Steinbach**, also formerly of Somerset, who has been promoted to a higher position in the Bethlehem operations in Pennsylvania.

The Anderson Fuel Co., Arrott Building, Pittsburgh, has been organized with G. D. Anderson as manager, to deal in coal and coke. Mr. Anderson, who recently resigned as sales manager for Marvel & Marvel, formerly was with the Poland Coal Co., Reilly-Peabody Fuel Co. and Straub-Atkinson Coal & Coke Co., all of Pittsburgh.

J. H. Klinck has been appointed assistant supervisor of production of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, according to an announcement by R. L. Wilson, works manager. Mr. Klinck has had wide experience in electrical and general engineering and sales work. He is a member of the American Society of Mechanical Engineers, having been active in the organization of both the Birmingham and Washington sections of the society, and is a fellow of the American Institute of Electrical Engineers.

UTAH

By agreement with counsel for both sides in the equity suit of the Quemahoning Creek Coal Co. vs. John Brophy, president of District No. 2, United Mine Workers, and other officers of the union, **the hearing of the temporary injunction** recently granted the coal company by Judge John A. Berkey **will be heard on Friday, May 11.** In the meantime, the preliminary injunction remains in force. The union officials declare the injunction too drastic, but the coal company contends that it is necessary to protect its rights and interests and the welfare of its employes.

The State Securities Commission has **approved the application of the Great Western Coal Mines Co., of which Jack Dempsey is president, to offer for sale $1,500,000 worth of stock.** The stock will be divided into 100,000 shares of preferred at $10 per share and 500,000 shares of common at $1. The company has increased its capital from $3,000,000 to $4,000,000.

Richard L. Bird has relinquished his claim to 160 acres of coal land in Carbon County, between Standardville and Clear Creek, and an application to lease the land has been made by the Great Western Coal Mines Co. In an impending suit for cancellation the Bird holding is alleged by the United States to be unlawful in that "claimant did not file on the lands in good faith."

VIRGINIA

The Seaboard Air Line Ry. is asking bids on something over 1,000,000 tons of coal for distribution over its entire system. Specifications have not been made public, according to announcement at the company's offices at Norfolk.

The Consolidated Coal Co., with headquarters in Roanoke, **has transferred its general offices to Norfolk,** with J. C. Davis in charge. H. E. Halstead, formerly of Hasler & Co. and recently with the Consolidated at Roanoke, will return to Norfolk with the change in offices.

WEST VIRGINIA

Daniel Howard, well known in mining circles in northern West Virginia, in association with D. T. Quinn, J. R. Quinn, Margaret Heitz and Joseph Burr, all of Clarksburg, **has organized Daniel Howard & Co.**, for the production and selling of coal. The principal office of the new enterprise to be at Clarksburg.

The Bowman Fuel Co., which recently acquired large acreages and several mining plants in Monongalia County, has been organized with a capital stock of $150,000. Morgantown is to be the headquarters for this company, the principal stockholders in which are Fred Tropf and Frank L. Bowman, both of Morgantown.

The following West Virginia coal concerns have increased their capital stock: **Logan Thin Vein Coal Co.**, from $50,000 to $100,000, also **changed name to Stollings Island Creek Coal Co.**, and headquarters moved from Logan to Huntington; **Burning Creek Coal Co.**, from $50,000 to $100,000; **Atlantic Smokeless Coal Co.**, from $250,000 to $300,000 The Haywood Coal **Mining Co. has reduced its capital stock** from $150,000 to $37,500.

The Consolidation Coal Products Co., organized under the laws of the state of Delaware and of which H. H. Warfield, of 67 Wall Street, New York City, is secretary, has been granted authority to do business in West Virginia, as has the **Fordson Coal Co.**, chartered under the laws of the state.

The South Fork Coal Co. has changed the location of its principal office from Huntington to the Kanawha Valley Bank Building, Charleston.

The Morrow Coal Co. has just been organized with a total capital stock of $50,000 for the purpose of producing coal in the Mercer County field. The office of this company is at Bluefield. Indentified with the new concern are James F. Morrow, Carl B. Short, A. D. White, W E. Belcher and T. V. Belcher, all of Bluefield.

The Snake Hill Coal Co., has been organized by Daniel Howard and associates with a view to operating in the Harrison County field, the new company being capitalized at $100,000. Clarksburg is to be the location of the principal office of the company. Associated with Mr. Howard in the new concern are J. R. Quinn, D. T. Quinn, Margaret Heitz and Joseph M. Burr, all of Clarksburg.

The Colcord Coal Co., of Montcoal, is getting picking tables and loading boom equipment for its various mines near Montcoal, W. Va. from Roberts & Schaefer of Chicago.

Lloyd Bailey, who for fifteen years or more has been connected with the Clark Coal & Coke Co., of Fairmont, **has been named as manager of the New England office** of the company and will have his headquarters at Worcester, Mass. The Clark company expects to specialize in coal for public utilities.

Illegal strikes continue in northern West Virginia, the latest one being at the Hutchinson plant of the Consolidation Coal Co., where 140 miners were out for a time dur-

ing the first week of May, when a committee objected to a company official. The belief prevails that many of the strikes which have taken place since April 1 can be attributed to bad feeling which developed during the election of miners' officials. Whatever may be the cause, many of the members of the mine workers' organization are apprehensive of the effect of so many illegal strikes on future negotiations with the operators. Failure of the miners to live up to their contract is creating a good deal of sentiment unfavorable to the union and to collective bargaining in the northern part of the state.

The Kentucky & West Virginia Power Co., at Logan, is installing three Westinghouse new model underfeed stokers to heat three 1,000-hp. Edgemoor boilers to furnish additional steam to generate electric power.

The Elm Grove Mining Co. of Elm Grove, has contracted with the Roberts & Schaefer Co., for a steel tipple which will include picking table screens and loading booms.

The Standard Thacker Coal Co. of Charleston, has reported a capital increase from $25,000 to $150,000.

WASHINGTON, D. C.

A report just made to the Department of the Interior by the Bureau of Mines, which has technical supervision of these operations, discloses that **the royalty value of oil, gas and gasoline produced from operations on government lands in January was $1,074,512.** In comparison with the figures for July, 1922, an increase of 65 per cent is shown. During March two new oil wells were brought in on government lands in Montana. Actual drilling operations were commenced in March in the Cold Bay oil field on government lands in Alaska. On April 1, a total of 10,608 permits for prospecting for oil and gas on government lands had been received from the General Land Office. A total of 334 leases for oil and gas production operations had been issued on the same date. Total net royalties for the production of oil, gas and gasoline on government lands, submitted up to April 1, amounted to $11,684,904. This figure represents operations in the States of Wyoming, California, Montana and Colorado. During March, 37,980 barrels of oil were produced on Naval Petroleum Reserve No. 3 (Teapot Dome), Wyo., on which the royalty barrels amounted to 6,252.74 and the royalty value to $13,175.71. Production for March on government lands in the Winnett, Mont., district amounted to about 166,000 barrels of oil.

Rudolph P. Miller, of New York, has been reappointed representative of the Federated American Engineering Societies on the National Board for Jurisdictional Awards. Mr. Miller's reappointment was officially characterized as evidence of the Federation's confidence in what he has accomplished. His efforts, it was stated, have been "earnest and constructive." Mr. Miller's present term expires in August. **President Mortimer E. Cooley has been authorized to appoint a committee** of the Federation **to look into the subject of basic wage rates.** The committee will report to the Executive Board as to what action, if any, the Board should take toward making such a study. President Cooley has also been authorized **to appoint a delegate to a conference on the problems of the rising cost of construction materials,** providing such a conference is called by Secretary Hoover.

Appointment of four members of the committee to conduct an investigation of the storage of coal is announced by the Federated American Engineering Societies. They are P. F. Walker, dean of engineering, University of Kansas; S. W. Parr, professor of applied chemistry, University of Illinois; H. Foster Bain, Director of the U. S. Bureau of Mines; L. E. Young, Union Light & Power Co., St. Louis. The chairman is W. L. Abbott, chief operating engineer of the Commonwealth Edison Co., Chicago. Four or five additional members of this committee are yet to be selected. Consideration is being given to recommendations by member organizations, and it is probable that the committee will be completed in the near future.

A. W. Ambrose, assistant director of the Bureau of Mines has resigned to take an executive position with the Empire Gas & Fuel Co., chief petroleum subsidiary of Cities Service Co. Mr. Ambrose will direct certain geological, land and lease, and scouting activities for the Empire company.

WISCONSIN

Retail prices on coal and coke at Milwaukee May 1 were: Anthracite—Egg, $15.75; stove, $16.10; nut, $15,95; pea, $14.20; buckwheat, $11.50 (75c. for carrying). Bituminous — Pittsburgh, Hocking and Youghiogheny, $9; pile-run, $8.25; screenings, $7.50; West Virginia screened, $9.75; pile-run, $8.50; screenings, $7.25; Pocahontas screened, $15.25; mine-run, $12.50; screenings, $12; smithing, $13.25; Kanawha gas mine-run, $8.75; Illinois and Indiana screened, $10.50; pile-run, $9.50; screenings, $8.50; coke, large sizes, $14.90; pea and nut, $11.90.

Jobbers of Illinois coal are endeavoring to maintain the advantage gained in Milwaukee during the period of scarcity of Eastern coal. They **have requested the city authorities to modify the specifications** for supplying 65,000 tons of coal to municipal institutions by making them broader and more uniform. They declare that the specifications in past years have been discriminatory in that they favored Eastern coal to the disadvantage of the Western product.

The precarious situation in the coal industry, which hampers the consumer in obtaining fuel and power, was advanced as an **urgent reason for a survey of the water-power resources in Wisconsin,** in a hearing before joint committees of both houses of the Wisconsin legislature. The bill would appropriate $25,000 for the survey.

Julies J. Goetz was appointed **receiver for the Kanawa Fuel Co.,** Milwaukee, April 23, on petition of the Penwell Coal Mining Co., which cited a civil court judgment for $607.77 obtained March 1. The officers of the company are A. S. Austin, president, A. S. Austin, Jr., vice-president, and E. W. Morrison, secretary and treasurer. On the same day John C. Post was named **receiver for the A. S. Austin Sons Co.,** coal dealers, on petition of the Plankinton Packing Co., owners of dock property. The Austins in the latter company are identical with those in the Kanawa company. **The Kanawa company apparently was preparing to reopen its Old Abe mine near DuQuoin., Ill.**

CANADA

The Canadian Collieries (D) Ltd. is doing some diamond drilling near the No. 5 Mine, Cumberland, and **a new seam has been struck** which, it is said, promises to develop into the best coal measure for domestic demand in the Comox field of Vancouver Island. This seam will be worked from the No. 5 shaft, from which a tunnel is being driven through rock in order to escape the heavy expense of a new pit head.

A. R. Braine, representing Tatham Bromage & Co., Ltd., a shipbroking firm of London, England, which sold large quantities of British coal in Canada last summer, has returned to Canada with the view of **establishing a permanent market for the British product.** He has booked some orders from eastern Canadian industrial concerns especially with pulp and paper mills.

Premier E. H. Armstrong recently announced to a delegation of miners that arrangements would be made whereby the **Eastern Trust Co. would operate the Minudie coal mines,** River Hebert, Cumberland County. The company owning the mine went into liquidation owing the miners about $15,000.

Alexander Lewis, M. P., told the members of the Kiwanis Club, of Riverdale, recently that **Nova Scotia coal is being used as far west as Cornwall,** but owing to present shipping facilities it is impossible to compete with the American coal west of that point. The cost of bringing coal from Alberta would be reduced one-third, he said, if larger vessels were able to enter the lakes and bring coal in cargoes of from 10,000 to 15,000 tons from the Head of the Lakes.

A Vancouver syndicate wants the right to mine coal it claims to have struck in the edge of Stanley Park, a natural park near the city, the property of the Dominion Government, that has been leasd to the city for 99 years. The syndicate is promising the City Council it will not disturb the park surface in any way and will completely electrify the mine to avoid the smoke nuisance. The City Attorney is expected to report to the council on the question soon.

The Ontario Cabinet, it is stated, will soon **rescind the various orders issued in connection with the fuel situation,** abolishing the offices of City Fuel Controller and Provincial Fuel Controller, together with all orders controlling the distribution and prices of fuel in the province.

In an address before the Empire Club of Toronto, **Prof. E. S. Moore,** formerly dean of the school of mines, at Pennsylvania State College and now of the University of Toronto, declared that **overcapitalization and overmanning were the twin causes of the troubles which have beset the continent's coal-mining industry** during the past few months. He stated that Canada would be unable to obtain Pennsylvania anthracite longer than twenty-five or thirty years.

Toronto civic authorities are having a shipment of a variety of Welsh anthracite not hitherto tried out sent to the city. It will arrive in May and the price to the city will be $14.50. It is staied that the city can pay overhead expenses and **sell it to the public at $15 per ton.**

Association Activities

Indiana Retail Coal Merchants Association

Honesty on the part of the Indiana retail coal dealers was urged April 25 and 26 at the **state convention of the Indiana Retail Coal Merchants' Association** at Indianapolis, Ind. In a letter from Marshall E. Keig, vice-president of the Consumers' Company, Chicago, Ill., a leader in the retail coal field, was an admission that the probe now being made of fuel conditions by the federal government disclosed that in many sections the fault lies with the retailers. More than 400 members of the association attended the session. Reports giving the belief of the coal dealers that prices will not fall during the remainder of the season were given at the convention. The probable shortage of coal cars and a lack of reserve coal stocks were cited as reasons.

Cincinnati Coal Exchange

A meeting of the Cincinnati Coal Exchange was held at the rooms of the Old Colony Club, on Thursday, May 3, at which President Robert Magee presided. Most of the talk was given over to the discussion of the Fact Finding Commission's questionnaire and the means and methods for filling out the information that is desired. Talks were made by Ernie Howe, of the Pocahontas Fuel Co., R. A. Gillham, of the Campbell Creek Coal Co.; R. A. Volter and George Hill, of the Chesapeake & Virginian Coal Co. Arrangements were concluded for the annual convention of the Michigan-Ohio-Indiana Retail Coal Association, which will be held in Cincinnati on May 23 and 24.

Winding Gulf Operators Association

At the regular quarterly meeting of the Winding Gulf Operators Association, held at White Sulphur Springs the latter part of April, matters of routine and questions affecting the district were given consideration. E. E. White, president of the association, presided over the meeting, which was fairly well attended, and at its conclusion a luncheon was served. Among those in attendance were E. E. White, W. P. Tams, A. J. King, W. B. Beale, A. W. Laing, C. R. Stahl, W. A. Phillips, B. H. English, W. H. Ruby, T. H. Wickham, Fred G. Wood, Enoch Ellison, B. E. Smith, J. B. Nowlin, S. M. Miller, William MacTaggart, S. B. Avis, Albert Belcher, Roy T. Wright, W. Gaston Caperton and L. Eperly. George Wolfe acted as secretary of the meeting.

Obituary

Joseph Oliver, formerly head of the Oliver Coal Co., which he founded at Bokoshe, Okla., died at his home in Louisville, Colo., April 6, 1923, aged 67.

Mr. Oliver was born in Newtown, North Wales, and came to America in 1887. He located first in Arkansas, where for many years he was prominently identified with mining operations. For eight years he was general superintendent of the Prairie Creek Coal Co., of Forth Smith, Ark.

Mr. Oliver later moved to Oklahoma, where he became general superintendent for the Bokoshe Smokeless Coal Co., afterward leasing the mines and forming the Oliver Coal Co., of which he was the head for several years.

During his active life he was prominent in public affairs, taking a leading part in the campaign for good schools and educational advantages in the early days of Oklahoma's statehood. He left a wife, four sons and four daughters.

Publications Received

Saward's Annual for 1923 is at hand. The standard form and contents of this book make it a familiar sight. There is, it appears, more than the usual amount of text matter in this volume, which makes it the more difficult to find the figures for which Saward's Annual and the Coal Trade before it has been chiefly valuable. A book of half the size with statistical contents better arranged would more than double the value of this little book, which after all is the only available statistical annual on coal other than government reports.

Tenth Annual Report of the Secretary of Commerce. Pp. 229; 6x9 in.; tables. Price 25c.

Traffic News

The Southern Pacific R.R. has announced a reduction in coal rates from Utah and Wyoming points to Lone Pine, Cal., to become effective about June 1. This reduction will make it possible for Utah and Wyoming operators to place their coal on the market in competition with coal from other sections of the country.

The Car Service Division of the American Railway Association announces the appointment of **R. W. Edwards** as district manager at Toledo, Ohio, with supervision of the following territory: Michigan, lower peninsula; Indiana, north of line from Michigan City through Wanatah, Fort Wayne and Decatur; Ohio, north of line from Decatur, Ind., through Mansfield and Cortland, Ohio, including cities named.

Rates in effect during federal control from June 25, 1918, on iron ore, coal, coke and limestone **from producing points in Alabama to various blast furnaces in that state were not unreasonable** or unduly prejudicial, according to a decision issued by the Interstate Commerce Commission April 28. The complaint filed by the Alabama Co., and other manufacturers, accordingly was dismissed. While the rates were intrastate, the commission had jurisdiction during the period of federal control, but said that it has no authority to deal with the present rates or to prescribe rates for the future.

In order that they may be able to compete in the Northwest with operators of southern Illinois **coal producers of the southern part of Ohio intend to launch a fight before the Interstate Commerce Commission** meeting in Minneapolis **in an effort to obtain a readjustment of freight charges.** Production in Ohio fields is at a low ebb, railroad men declare. This is due to the fact that Northwestern dock operators are reluctant to enter into contracts until the outcome of the conference has been announced and because the lakes are tied up by ice later this year than they have been for 30 years, it has been asserted. However, no difficulty with the mines is anticipated this summer, the agreement now in effect having a year to run. Before leaving for Minneapolis, W. D. McKinney, secretary of the Southern Ohio Coal Exchange, expressed hope that operators of the state would be granted at least an even break. Under the prevailing rates, he said, southern Illinois producers have a 46c. advantage. Freight charges for Ohio total $3.98 a ton, while those from southern Illinois are $3.47.

With the Virginian and the Norfolk & Western both believed to be knocking at the door of the Logan field there is every **prospect of an impending conflict for rights of way in that field.** That either one road or the other is seeking entrance to Logan territory is the deduction of operators as a result of the proceedings instituted in the Circuit Court of Logan County by the Conley's Creek R.R., asking for the appointment of appraisers to condemn a railroad right of way from Stirrat to Gilbert through the large holdings of the late Devil Anse Hatfield and others.

In an effort to obtain joint car service at its plants near Winding Gulf, W. Va., **the Winding Gulf Colliery has instituted proceedings before the Interstate Commerce Commission.** The company points out in a brief filed in the case that a number of the mines adjacent to those of the Colliery Company have been enjoying and are now enjoying joint car service as between the Chesapeake & Ohio and the Virginian Ry. but that the plants of the complainant have not been accorded such a privilege.

Lower railway rates on coal from Alberta and the maritime provinces were promised by Sir Henry Thornton, president of the Canadian National Railways, in a telegram to Senator J. S. McLennan May 6. The telegram said the railways would quote a rate of $9 a ton on coal from Alberta to Ontario.

It will now be possible for the **Monongahela Ry. to proceed with construction work on its large yard at Maidsville,** in Monongalia County, W. Va., at the junction point of the Morgantown & Wheeling Ry. with the Monongahela Ry., an agreement having been reached recently. The county road will be moved to the embankment of the Monongahela River and the space between the old county road which ran alongside the railroad tracks will be utilized for thirteen yard tracks, each a mile in length, giving the railway thirteen miles of yard space between Maidsville and the Bertha mine and enabling the company to relieve congestion and handle much more coal than is now possible.

The Southwestern Interstate Coal Operators' Association and the Oklahoma Coal Operators' Association are actively supporting **proposed changes in the rates on slack coal from points in Arkansas and Oklahoma on the Frisco to destinations on the same line in Texas.** These destinations include Dallas and Fort Worth. The proposed rates are opposed by the Colorado & New Mexico Coal Operators' Association on the ground that they will create an unlawful discrimination and disadvantage against the producers of coal in the Trinidad and Walsenburg districts of Colorado and the Raton and Dawson districts of New Mexico. A large amount of testimony was given with respect to screening practice in the Colorado and New Mexico fields, and in the Henryetta group. The Southwestern operators, however, contend that this testimony is pertinent only for the purpose of indicating that "nut coal" means one thing in the Colorado and New Mexico territory and an entirely different kind, size and grade of coal in Oklahoma, and that the 3-in. nut coal produced in Colorado and New Mexico and what is denominated nut coal in group 15 in Oklahoma are not used for the same purposes and are not competitors in the destination territory involved. The Southwestern Interstate Coal Operators' Association and the Oklahoma Coal Operators' Association urge that the protest of the Colorado & New Mexico Coal Operators' Association be overruled and the proposed rates be permitted to become effective.

Rates on slack and run of mine coal from mines in the Bon Air (Tenn.) group to Richard City, Tenn., are unreasonable, in the opinion of J. P. McGrath, an examiner for the Interstate Commerce Commission. In a report made to the commission, he also holds that **rates on slack and run of mine from Orme, Whiteside, Etna and Slope Wall, Tenn., and Montague, Ala., and from mines in the Tracy City group to Richard City, are not unreasonable.**

The Utah Terminal Railroad has been given a writ of convenience and necessity to operate a railroad in Carbon County and the **Utah Railway Company** is given the status of an interstate carrier, in a decision just rendered by the I. C. C. **The Utah Railway now plans to purchase the Utah Terminal's property** which will give it all connection from the coal mines in Spring Canyon to Provo where, as an interstate carrier, it may receive and exchange cars with other lines. The decision reverses a previous one rendered in the fall of last year. At that time the D. and R. G. Western Railroad opposed the application on the ground that it was itself adequately equipped to furnish cars for the normal requirements of shippers. In addition to the petition of the railroads referred to the present application for the certificate was supported by The Spring Canyon, Peerless and Standard Coal companies. The D. and R. G. company pleaded this time that the railroad shopmen's strike several months ago had handicapped it. The Utah Terminal Railroad is a Spring Canyon line 32 miles long connecting with the Utah Railway at Mohrland. The Utah extends from Mohrland to Provo.

An injunction restraining the State Railroad Commission from putting into effect a lower rate on coal between Morganfield and Hopkinsville, Ky., was granted to the Illinois Central R.R. April 21. The order passed by the Railroad Commission, March 14, according to the petition, changed the rate on coal from $1.38 a ton to $1.07 and ordered a refund of money paid the railroad company on 2,666,660 tons of coal delivered in 1921. The order stated that the rate was "extortionate, unjust and unreasonable."

Coming Meetings

The American Wholesale Coal Association will hold its annual convention June 12 and 13 at the Gibson Hotel, Cincinnati, Ohio. Secretary, G. H. Merryweather, Union Fuel Bldg., Chicago, Ill.

Illinois and Wisconsin Retail Coal Dealers' Association will hold its annual meeting June 12-14 at Delavan, Wisconsin. Secretary, I. L. Runyan, Great Northern Building, Chicago, Ill.

Southwestern Interstate Coal Operators' Association will hold its annual meeting June 12 at Kansas City, Mo. General Commissioner, W. L. A. Johnson, Kansas City, Mo.

Pennsylvania Retail Coal Merchants' Association will hold its annual meeting May 23 and 24 at Wilmington, Del. Secretary, W. M. Bertolet, Reading, Pa.

American Association of Mechanical Engineers will hold its spring meeting at Montreal, Quebec, Canada, May 28-31. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Association of Purchasing Agents will hold its eighth annual convention and Informashow at Cleveland, Ohio, May 15-18. Convention headquarters, room 219, Hotel Winton, Cleveland.

The National Association of Manufacturers will hold its 27th annual convention at the Waldorf-Astoria, New York City, May 14-16.

New England Coal Dealers' Association will hold its annual meeting at Providence, R. I., June 13-15. Secretary, C. R. Elder, Boston, Mass.

National Retail Coal Merchants' Association will hold its sixth annual convention June 25, 26 and 27 at Scranton, Pa., with headquarters at the Hotel Casey.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Managing director and secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

International First-Aid and Mine-Rescue meet will be held Aug. 27-29, at Salt Lake City, Utah.

American Institute of Electrical Engineers will hold its annual convention June 25-29, at Swampscott, Mass. Secretary F. L. Hutchinson, 29 West 39th St., New York City.

International Railway Fuel Association will hold its spring convention at the Hotel Winton, Cleveland, Ohio, May 21-24. Secretary-treasurer, J. G. Crawford, Chicago.

American Society for Testing Materials will hold its annual meeting at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., beginning June 25 and continuing throughout the week. Secretary, E. Marburg, Philadelphia, Pa.

The Colorado & New Mexico Coal Operators' Association will hold its annual meeting June 20 at Denver, Col. Secretary, F. O. Sandstrom, Denver, Col.

The Electric Power Club's annual meeting will be held at the Homestead, Hot Springs, Va., June 11-14. Executive secretary, S. N. Clarkson, Cleveland, Ohio.

National Coal Association will hold its sixth annual convention June 19-22 at Atlantic City, N. J. Assistant secretary, C. C. Crowe, Washington, D. C.

Michigan-Ohio-Indiana Coal Association will hold its annual convention at the Hotel Sinton, Cincinnati, Ohio, May 22-24. Secretary, B. F. Nigh, Brunson Bldg., Columbus, Ohio.

West Virginia Coal Mining Institute has tentatively set June 5 and 6 for its annual meeting, to be held at Clarksburg, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Retail Coal Dealers' Association of Texas will hold its eighteenth annual convention at Galveston, June 11 and 12. Secretary, C. R. Goldmann, Dallas.

The American Institute of Mining and Metallurgical Engineers has accepted the invitation extended by the Ministers of Mines of Ontario and Quebec and by the Canadian Institute of Mining and Metallurgy to hold its autumn meeting in Canada. The meeting will start Aug. 20 at Toronto and end Aug. 30 at Montreal. Secretary, F. F. Sharpless, 29 West 39th Street, New York City.